

Schoolwide Applications Model:
Implications for Academic Achievement in the District of Columbia Public Schools

By

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Abstract

This study investigated the impact of the Schoolwide Applications Model (SAM) on the academic achievement of students attending seven schools in the District of Columbia Public Schools (DCPS). Between-subjects ANCOVAs were conducted to compare the academic achievement scores of students attending DCPS SAM schools to the scores of students attending comparable DCPS schools not implementing SAM across three years, while controlling for differences at baseline. Another between-subjects ANCOVA was conducted to analyze the academic achievement of students attending schools with high levels of fidelity to the model to schools with low levels of fidelity to the model and non-SAM comparison schools. A repeated measures ANOVA was conducted to show the effect of SAM on academic achievement of individual students with test scores obtained during all three years of SAM implementation. Results of this study indicated mostly insignificant findings or significant findings in favor of comparison schools. Fidelity of reform implementation, leadership transitions in DCPS, and the sole use of standardized state assessment data to measure student achievement impacted study results. Broader implications of study results on policy, research, and practice are explored. Ideas for future research are also discussed.

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Chapter 1: Introduction

Overview

A broad goal of the No Child Left Behind Act (NCLB) is to close the 40-year achievement gap between urban and suburban schools by increasing accountability standards and focusing schools' attention on improving test scores; i.e. by focusing on improving academic achievement test scores (Darling-Hammond, 2007). Urban schools, with large numbers of financial, professional, and instructional disparities, find it especially difficult to meet the accountability demands of NCLB (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010; Harris, 2012). In fact, Sandy and Duncan (2010) report that urban schools have significantly more students scoring below standards (i.e. below basic) on the National Assessment of Educational Progress (NAEP) assessment in the areas of reading, mathematics, science, and writing than the rest of the nation's schools. Researchers have responded to the needs of urban schools by developing and studying school reform models to test their ability to mitigate the negative effects of urban environments and increase academic achievement in chronically low-performing schools (Datnow, 2000; Datnow, Borman, Stringfield, Overman, & Castellano, 2003; Farmer-Hinton, 2002; McDermott, 2000; Rau, Baker, & Ashby, 1999; Shipps, 2003; Stringfield & Yakimowski-Srebnick, 2005).

The Schoolwide Applications Model (SAM) is one option for reforming schools and raising academic achievement in urban areas. SAM theorizes that when certain cultural changes occur within a school during a three to five year period, academic achievement scores will rise for all students in all subgroups. This dissertation tested this theory as it applies to the District of Columbia Public Schools (DCPS). The current study was designed to understand the effects of

SAM on academic achievement in the District of Columbia Public Schools (DCPS) after three years of implementation. DCPS schools implementing SAM were matched with non-SAM DCPS schools with similar demographics to allow for comparison. This provides an understanding of SAM's effect on academic achievement while helping account for other factors impacting the district during SAM implementation. Results from the study provide practitioners and policymakers with a better understanding of the effects of SAM in DCPS and help determine whether SAM is a viable model for raising academic achievement in urban schools needing improvement.

Conditions of the Urban Environment

Neighborhoods in America's urban cores are often characterized by increased levels of violence, drugs, poverty, residential mobility, joblessness, family instability, limited English proficiency, and crowded housing conditions (Anthony, 2008; Sandy & Duncan, 2010). It has been argued that certain historical, political, and economic events contributed to the development and persistence of these conditions in inner city environments (Bass & Gerstl-Pepin, 2011; Gans, 1995; Wilson, 1996, 2009). Two of the most widely documented events impacting the current state of urban communities include deindustrialization and suburbanization.

Deindustrialization. The decline of goods production was devastating to America's working class. As advanced technologies developed, the U.S. economy shifted away from manufacturing toward technologically-advanced work. As a result, the number of factory-based jobs decreased dramatically (Darling-Hammond, 2000; Farmer-Hinton, 2002). The growing information-focused job market required larger numbers of college-educated employees, offering fewer employment opportunities for central city residents with little or no education beyond high

school (Wilson, 2009). Citizens unable to obtain educational advancement become part of a growing underclass, left without the skills and knowledge necessary to obtain available work and maintain a steady income. As a consequence, many working class citizens ended up in poverty, on welfare, and/or in prison (Darling-Hammond, 2000).

Increased levels of unemployment in urban cores became the catalyst for greater community instability. Wilson (1996) notes that “high rates of joblessness trigger other neighborhood problems that undermine social organization, ranging from crime, gang violence, and drug trafficking to family breakups and problems in the organization of family life” (Wilson, 1996, p. 21). The deterioration of urban neighborhoods discouraged institutional investment, leaving even fewer job opportunities and creating further corrosion of inner city communities.

Suburbanization. Advances in the transportation system during deindustrialization prompted suburbanization and urban sprawl. The open space and higher social status of the suburbs appealed to many middle-class white residents, luring them to find work and housing outside of city centers. The financial resources of mostly white, middle-class citizens exited urban areas with them; eroding city tax bases (Morris, 2004; Rury & Mirel, 1997) and significantly altering the racial and economic distribution of the population in metropolitan areas (Kantor & Brenzel, 1992). White flight to the suburbs left mostly poor, minority families to attend inner city schools, starkly dividing racial groups and social classes.

The division of racial groups and social classes through the process of suburbanization caused what Wilson (1996) refers to as a “double trap” for many lower-income inner-city residents (p. 186). Increased rates of joblessness and crime in urban communities – resulting from decreased opportunities for work in industrial markets – caused a dramatic decrease in

urban property values. For many former industry workers, purchasing expensive suburban housing or reliable vehicles to transport themselves there daily was virtually impossible, leaving employment opportunities in the suburbs physically out of reach. Many working class families became stuck in dangerous urban communities with few opportunities for advancement.

Impacts of Urban Conditions

Schools are directly impacted by the harsh conditions of urban communities. Financially-strapped urban communities have fewer resources to dedicate to schools. As a result, school facilities are dilapidated, teacher quality is reduced, and materials are scarce within urban schools, creating profound barriers to educational opportunities for ethnic minority groups living in city centers (Darling-Hammond, 2000). Researchers have suggested that the social, economic, and political contexts of urban environments, such as the ones discussed above, have a direct impact on student achievement (Rury & Mirel, 1997).

It has been hypothesized that growing up surrounded by the harsh conditions of urban environments is disabling to students (C. W. Lewis, James, Hancock, & Hill-Jackson, 2008). Researchers noting a disproportionate representation of minority students in special education support this hypothesis (Blanchett, 2006; Hosp & Reschly, 2004; Salend & Duhaney, 2005; Skiba, Poloni-Staudinger, Gallini, Simmons, & Feggins-Azziz, 2006; Zhang & Katsiyannis, 2002). Disproportionate representation has been defined as “the extent to which students with particular characteristics (e.g. race, ethnicity, language background, socioeconomic status, gender, age, etc.) are placed in a specific type of educational program or provided access to services, resources, curriculum, and instructional and classroom management strategies” (Salend & Duhaney, 2005, p. 213). While qualification for special education offers an increase in the

number of services provided, it can also lead to placement in more restrictive environments. Researchers report that black students are more likely to be qualified for special education in disability categories that are associated with more restrictive environments (Skiba, et al., 2006). Placement in more restrictive environments limits instructional time with peers, increases stigma, and increases student reliance upon services (Turnbull III, 2009).

The District of Columbia (DC)

Representing the nation as its capital city, DC is one of the most well-known urban communities in the U.S. Over 600,000 people live within the eight wards of DC, making it the 24th most populous city in the country. DC continues to grow and expand, experiencing a 5.2% increase in population since 2000 (United States Census, 2010). As the nation's capital, DC has a governance structure unlike any other city in the U.S. Although headed by a locally elected mayor and 13-member city council, the U.S. Congress maintains authority over the city and may overturn local laws. DC residents lack voting representation in the U.S. Congress, but are granted three votes in the Electoral College in presidential elections.

DC is rich with diversity in race, language, and economic level. According to the 2010 U.S. Census, approximately 50% of DC residents are black, 38% are white, 9% are Hispanic, 3% are Asian, and 7% represent another race. About one in every five citizens in DC speaks a language other than English in their home. The economic levels of the citizens of DC vary greatly. The median income level and percentage of residents with college degrees in DC are higher than national averages. However, DC also experiences a 17% poverty rate, considerably higher than the national average of 13% (National Research Council, 2011). Contrasts in economic levels of DC residents are reflected in the contrast of neighborhood demographics.

The district's wealthiest ward holds a median income of nearly 200% more than the citywide average, while neighboring wards have median incomes of up to 37% below the citywide average.

Patterns of criminal activity occurring in DC neighborhoods are consistent with the city's patterns of economic disadvantage. A policy brief published by the District of Columbia Crime Policy Institute (Cahill & Roman, 2010) notes that most crime in DC is concentrated in a relatively small area in the center and eastern edges of the city and remains especially significant in neighborhoods that have not experienced economic revitalization (Klein & Keating, 2006). It is estimated that over one quarter of the crimes in DC occur in just five percent of district blocks. Over 70% of district blocks report fewer than five crimes, or no crimes at all, in any given year (Cahill & Roman, 2010).

Impact on Education. The complexities of governance and division of social groups in DC greatly impact the city's public schools. DCPS has traditionally been known for overly complex decision-making processes, mismanagement of finances, dilapidated schools, and ineffective teaching (Hannaway & Usdan, 2008; National Research Council, 2011). Before 2007, DCPS were governed by a DC Board of Education and lacked a state department of education to supervise and support the public schools. Absence of formal bureaucratic educational structures in DCPS created a lack clarity about who should govern its schools and how they should be managed, causing the public schools to endure 17 different management structures since 1804 (National Research Council, 2011). It has been noted that "the [DC] schools have been governed differently and with more volatility than any other urban district" (National Research Council, 2011, pp. FM-vii).

Increased national educational standards and accountability structures accentuated DC's poor academic performance and prompted public school officials to adopt its second major educational reform since the year 2000. The Public Educational Reform Amendment Act (PERAA) of 2007 was adopted with the goal of shaking up the system and bringing new energy to the public schools (National Research Council, 2011). PERAA shifted control of the public schools from an elected school board to the mayor, created a DC state department of education, and produced a chancellor position for the District of Columbia Public Schools (DCPS). DC officials hoped PERAA would jolt the school system back to life, eliminate ineffective management structures, and improve student outcomes.

The Office of the State Superintendent of Education (OSSE) is the State Education Agency created through PERAA. OSSE oversees all public education in DC, including DCPS, Public Charter Schools, the University of the District of Columbia, and DC Community College. OSSE sets statewide policies, provides resources and support, and manages accountability. The DC State Board of Education (DCSBOE) works with OSSE, providing advice on educational matters related to state standards, state policies, and state regulations proposed by the Mayor or the State Superintendent of Education (State Superintendent of Education, 2011). OSSE is different from other State Departments of Education in the U.S. because it only oversees one school district.

District of Columbia Public Schools (DCPS). Compared to other urban school districts in the U.S., DCPS is relatively small, serving approximately 46,000 students in 117 schools. There are 65 elementary schools, 14 middle schools, 16 high schools, 19 educational campuses, and 3 special education centers in DCPS. Approximately 69% of students attending DCPS are Black, 13% are Hispanic, 16% are White, and 2% represent another ethnicity. Sixty six percent

of students in DCPS receive free/reduced lunch rates, 18% qualify for special education, and 9% are English Language Learners (District of Columbia Public Schools, 2012).

Residential patterns in DC create schools that are racially and economically separate. High rates of private school attendance also impact segregation. It is estimated that less than a third of school-aged White children living in the DC area attend the city's public schools, while approximately 90% of school-aged Black and Hispanic children do the same (National Research Council, 2011).

As in other urban areas, it is likely that high rates of poverty, crime, and violence in the DC area contribute to dismal academic achievement of students in DCPS. DC has been slated as one of the highest-cost-yet-lowest performing districts in the country (Settimi, 2007). At the start of the 2010-2011 school year, 75% of schools in DCPS failed to meet adequate yearly progress (AYP) targets for at least 2 consecutive years, moving them into federally mandated school improvement status. Sixty-five percent of those schools failed to make AYP for at least 4 years, warranting corrective action and school restructuring (District of Columbia Office of the Chancellor, 2010). Therefore, almost two-thirds of schools in DCPS are mandated under the Elementary and Secondary Education Act (ESEA) to reform internal structures, extend the school year, replace school staff relevant to AYP failure, contract with outside school reformers, and face takeover by DC's state education agency, OSSE. Academic school reform is not an option in DCPS, it is a requirement.

Legal disputes have also plagued DCPS over the past two decades. In July and October of 1997, Blackman and Jones brought litigation against DCPS alleging violations of their childrens' right to a free appropriate public education (FAPE) afforded to them under the

Individuals with Disabilities Education Act (IDEA) (United States District Court for the District of Columbia, 2006). The Plaintiffs in the case cited failure by DCPS to provide due process hearings, Hearing Officer Determinations (HODs), and Settlement Agreements (SAs) within the 35 to 45 day legal requirement. On June 3, 1998, the Court ruled in favor of the Plaintiffs and urged parties on both sides of the case to work together to come up with a plan for dealing with the backlog of filed DCPS hearings. After extensive negotiations, the parties entered into a Settlement Agreement in 1999. After nine months, 898 backlogged hearing requests remained. The Defendants were clearly unable to meet Settlement expectations. From 1999 to 2003, the parties entered into multiple Settlement Agreements, court-mandated mediation, an Alternative Dispute Resolution, and a Consent Decree, but the backlog of legal hearings continued. Court-mandated agreements were not enough to deal with the enormity of the problem of backlogged due process hearings in DCPS. Additional information was needed to determine the causes of and contributing factors to the backlog.

As part of the Consent Decree in 2003, the Plaintiffs in *Blackman/Jones* named an expert to assess the DCPS special education system and make recommendations to DCPS about how to provide timely due process hearings, HODs, and SAs. The Plaintiffs' expert evaluation report stated that the backlog of hearing requests were a direct result of the district's inability to adequately execute special education and related services (United States District Court for the District of Columbia, 2006). In order to eliminate the backlog of hearing requests, the Defendants would need to develop a plan to deal with the systematic failures of their special education system. Taking the expert's evaluation into consideration, the parties entered into a new agreement on December 10, 2007 outlining their plan to reduce the backlog of due process hearing requests. The plan included the requirement of DCPS to pilot an exemplary special

education program ("Agreement of Parties to Blackman/Jones Case," 2007; DCPS Watch, 2011). Again, reform was no longer optional, it was mandatory.

A New Approach. The 2007 *Blackman-Jones* agreement and federally mandated school improvements under ESEA left DCPS with two primary reform goals: create a pilot program of exemplary special education programs in a sample of elementary schools and improve the academic achievement of students. Although finding a reform model that could satisfy both goals seemed challenging, DCPS officials began their search for innovative school reform models the same year.

DCPS representatives learned about a school reform approach developed by University of Kansas researchers called the Schoolwide Applications Model (SAM) (Sailor & Roger, 2005) at a conference hosted by the Louisiana State University Health Sciences Center in 2007. SAM's record of reforming schools in large, urban cities serving mostly low-income populations instantly captivated DCPS officials. They were fascinated with SAM's successful transformation of 20 urban elementary schools by fully integrating students with disabilities into general education and, in the process, increasing overall academic achievement. Officials were convinced that SAM was the ideal reform model for DCPS. Not only could it satisfy the provisions of the *Blackman-Jones* agreement, it also had the potential to raise the academic achievement of all students, meeting the school improvement requirements mandated by the federal government under ESEA.

SAM was written into the Agreement of the Parties to the *Blackman/Jones* case in 2007 as the pilot program for creating exemplary special education programs ("Agreement of Parties to Blackman/Jones Case," 2007). SAM implementation began in eight DCPS elementary schools in August of 2008, followed by eight additional DCPS elementary schools in the fall of

2009. SAM implementation continued in 16 DCPS elementary schools through the 2010-2011 school year.

Purpose of the Study

The purpose of this study is to understand the effect of the Schoolwide Applications Model (SAM) on the academic achievement of students attending DCPS. Results of this study identify whether collectively the guiding principles of SAM constitute a viable model for policymakers, districts, and schools pursuing alternatives to improving student academic achievement.

Research Questions

The goal of this study is to understand the impact of SAM on academic achievement in DCPS over its first three years of implementation. The following research questions guide this study:

1. Are there significant differences in the academic achievement of students attending SAM schools and students attending comparable schools that did not implement SAM?
2. What impact does SAM have on the academic achievement of students attending SAM schools during three years of implementation in DCPS?
3. What is the connection between the fidelity of SAM implementation and academic achievement?
4. What impact does SAM implementation have on the academic achievement of students qualifying for special education services in DCPS?

Significance of the Study

Understanding the effectiveness of SAM in raising academic achievement and integrating students with disabilities into general education is limited to the data gathered within schools that reached sustainable levels of implementation. Available data show SAM is a promising model for increasing academic achievement, integrating students with disabilities fully into general education, and complying with IDEA and ESEA mandates (Sailor, Wolf, Choi, & Roger, 2009). In order to add to the knowledge base surrounding SAM, it is critical to analyze its effectiveness in increasing academic achievement in DCPS.

Research indicates that schools that implement reform programs with fidelity (i.e., measured procedural integrity) typically begin to show significant signs of improvement between their third and fifth years of implementation (Payne, 2008). DCPS completed its third year of SAM implementation within seven schools in June of 2011, making it an ideal time to conduct research on the effectiveness of SAM on increasing academic achievement. Understanding the effectiveness of SAM will help determine whether or not it should continue to be transferred to other schools, districts, and states.

Given education's current emphasis on academic accountability, it is important to research reform models that increase student academic achievement. This study utilizes standardized state assessment data in reading and mathematics to measure academic achievement. The academic focus of the accountability system in America's schools justifies this study's use of academic achievement, as measured by standardized state assessment data, as the measure for successful SAM implementation. NCLB requires all public educational institutions to annually assess and report students' academic progress in mathematics and reading. Although challenged with meeting the cognitive, behavioral, developmental, physical,

and functional needs of students, schools are assessed primarily on their ability to increase academic outcomes. The creators of SAM recognized the significance of this. Sailor et al. (2006) stated:

Schools laboring under the accountability standards (i.e., AYP) of No Child Left Behind (NCLB) have as their primary interest the enhancement of academic progress of all assessed students as measured by standardized state grade-level achievement tests, particularly in math and literacy. If SAM, as a school reform process, had no appreciable effect on student achievement outcomes, there would be little incentive to undergo the rigorous systems change processes needed to put it into place (pg. 25).

Increased academic outcomes are predicted by SAM developers to be predicated upon the successful implementation of all SAM's critical features, as measured by the SAM Analysis of Selected Critical Features (SAMAN) (Sailor, 2009). In this study, SAMAN scores will be used to determine each school's level of treatment integrity (i.e., fidelity) and will be compared to each school's academic achievement outcomes to determine the effectiveness of the model.

Research on the effectiveness of SAM can provide policymakers, districts, and schools with an alternative model for increasing academic achievement of all students, including those classified with a disability. Currently, the effectiveness of SAM in raising academic outcomes of students is limited to the data gathered within two school districts that reached sustainable levels of implementation and experienced increased academic achievement. In order to determine the potential for transferring SAM to other states, districts, and schools, additional research on its effectiveness in raising academic achievement is necessary. DCPS completed its third year of SAM implementation in June 2011, making it an ideal site for additional SAM research. If this study supports the SAM prediction that its installation is an effective model for increasing academic outcomes, it helps to build a case for transferability to other schools,

districts, and states as a model for increasing academic achievement as well as well as special and general education integration.

Dissertation Proposal Outline

Chapter 2 (Review of Literature) explores the literature on the history of SAM and its theoretical underpinnings, educational policy, and school reform. Chapter 3 (Methods) describes study participants, instruments, and data analysis. Chapter 4 (Results) outlines study results by research question. Chapter 5 (Discussion) explores study considerations, implications, and ideas for future research.

Chapter 2: Review of Literature

Introduction

As suggested in the introductory chapter, evidence supporting the connection between SAM implementation and increased academic achievement is limited. To better comprehend SAM's potential to be taken to scale, three primary bodies of research will be explored. The first body of research provides an overview of SAM, its foundational frameworks, and history. Policy decisions leading to the development of SAM are discussed. The second body of research reviews educational policy. SAM cannot be taken to scale if educational policy does not support its implementation. Two major U.S. educational policies are introduced and aligned with the guiding principles of SAM. The third body of research reviews the unique challenges of schools in urban settings and discusses school reform models implemented to address such challenges. The school reform literature most applicable to SAM includes creating inclusive school environments, utilizing positive behavioral interventions and support (PBIS), establishing family and community connections, and garnering district support. Each of these areas will be discussed and embedded within SAM's six guiding principles (Sailor & Roger, 2005).

Schoolwide Applications Model (SAM)

The goal of SAM, a structural school reform model, is to raise academic achievement by fully integrating fragmented educational resources, supports, and services for the benefit of all students. SAM schools subscribe to a collaborative, data-driven, standards-based educational program providing all students with the learning support they need to be successful in general education, regardless of disability classification or severity of need. To achieve this, SAM assessors monitor progress toward full implementation and SAM consultants provide ongoing

technical assistance (TA) directed at transforming school organizational structures to support full integration. SAM is built upon a Response to Intervention (RTI) framework. To fully understand SAM and its theoretical underpinnings, it is essential to review educational system shortcomings, policy changes addressing system inadequacies, the emergence of RTI, and RTI's goals and implementation strategies.

System shortcomings. Skyrocketing costs associated with special education have concerned researchers and policy makers for decades (Chasson, Harris, & Neely, 2007; Finn Jr., Rotherham, & Hokansson, 2001; D. R. Lewis, Bruininks, & Thurlow, 1989; The President's Commission on Excellence in Special Education, 2002). It is estimated that it costs two to three times more to educate a student in special education (Fuchs & Fuchs, 2006). Poorly executed educational policies and practices have over-classified students with disabilities, separated educational services, generated 'wait to fail' approaches to disability classification, and produced student dependency upon services. Each has proven expensive. This section will review these policies and practices and discuss how they contribute to rising costs.

The number of students qualifying for special education services "increased 60% since the federal special-education law was first enacted, from 8.3% of students in 1976 to 13.3% of students in 2000" (Greene, 2007, p. 705). Researchers note that the growing number of students in special education is not solely a function of an increased overall student population, but also growth in the proportion of students claiming to be in need of special education (Horn & Tynan, 2001). It is hypothesized that the discrepancy standard, which requires a significant gap between a student's measured intelligence and achievement, contributes to the over-classification of students with specific learning disabilities (Greene, 2007). Under the discrepancy model, specialized services and supports are reserved for students who receive a label of specific

learning disability and qualify for special education. Struggling students in general education without a large enough discrepancy between measured intelligence and achievement frequently advance through school without additional services and support that could aid in development. With each passing year struggling students fall further and further behind, making it almost impossible to catch up to grade level expectations. Eventually, a number of students fall far enough behind grade level benchmarks to qualify for special education services, even though intense early interventions could have prevented classification of disability. As the number of students qualifying for special services increases educational costs swell.

Segregated general and special education systems also contribute to the over-classification of students with disabilities, increasing educational costs. Traditionally, special education employs a pull-out model. This model segregates students with disabilities from typically performing peers in order for them to receive specialized instruction. Minimal collaboration occurs between general and special educators, who typically plan and deliver lessons separately. The likelihood of duplicating services and supplies increases when systems operate independently. The result is amplified costs.

Dependency is another concern impacting costs. Research indicates that once students qualify for special education, they typically remain there until exiting school (Turnbull III, 2009). Turnbull's (2009) opinion is that placement into a special education classroom stigmatizes students, contributing to dependency. Being segregated from typically developing peers teaches students in special education that they are 'different' and require special services to succeed. Dependency upon services increases the likelihood that students remain in special education for the duration of their K-12 educational careers. In turn, elevated costs for special

education services are likely to be required every year the student remains in school.

Educational costs expand exponentially over time as students become dependent upon services.

Policy changes. In 2001, Finn, Rotherham and Hokanson released a book through the Progressive Policy Institute and the Thomas B. Fordham Foundation critically analyzing the effectiveness of special education in meeting the needs of students with disabilities (Finn Jr., et al., 2001). The book raised concerns related to rising costs, over-classification of students with disabilities, disproportionate representation of minority students in special education, and lack of accountability. The authors suggested that the discrepancy standard was ineffective because students have to fail before having access to evidence-based interventions. Claims were also made that special education makes students dependent upon services and fails to develop students' skills necessary for reaching economic self-sufficiency after leaving school.

The President's Commission on Excellence in Special Education (PCESE) released a report the following year addressing similar concerns and made policy recommendations to rejuvenate special education (The President's Commission on Excellence in Special Education, 2002). First, the report found that there was too much focus on special education paperwork and recommended focusing on the process of educating children with disabilities. Second, the report claimed special education waited for students to fail before intervening and recommended utilizing a model that prevented unnecessary disability classification. Third, the report noted a separation of special education students from their typically performing peers and recommended all students' educational plans be based on the goals and curricula of general education.

Congress responded to the criticisms made by Finn, et al. and incorporated PCESE's recommendations into the 2004 reauthorization of IDEA by recognizing RTI as an alternative to the discrepancy model for qualifying students for special education services. The reauthorization

allocated up to 15% of schools' special education funding to implement RTI and early intervening services (EIS) in general education (20 U.S.C. Sec. 1413(a)(4)(A)(ii)). Under this provision, IDEA increases collaboration between general and special education and encourages educators to use their unique strengths to promote high-quality education for all students.

Adopting RTI. Funding frequently guides policy decisions. In order to be successful, RTI must reduce costs associated with special education. However, reducing costs is no small task. Doing so effectively requires substantial changes in the operation of schools. RTI reduces costs by preventing unnecessary disability classification and streamlining general and special education services (Fuchs & Fuchs, 2006; Hazelkorn, Bucholz, Goodman, Duffy, & Brady, 2011). This section describes how RTI is a cost effective alternative which improves practice and identifies strategies to meet goals.

RTI integrates general and special education services, increasing collaboration, decreasing costs, and reducing stigma (Sailor, 2009). Schools employing an RTI framework pool resources to provide specialized services to any student who can benefit, not solely those who qualify for special education or related services. All instruction is based upon the standards and curricula of general education. Under an RTI model, educators with a variety of expertise work together to provide an appropriate education to all students. Any student who fails to meet grade level expectations receives specialized services, reducing the stigma associated with special education.

RTI prevents unnecessary disability classification. In the process, costs are reduced because fewer students require expensive segregated special education placements. The strategies used to implement RTI include universal screening, rapid response support, interventions matched to need, and continuous progress monitoring.

Universal screening. All students are screened for academic and behavioral risk under an RTI model (McCook, 2006; Sailor, 2009). Screening results alert educators as to which students are at-risk for failing to meet grade-level expectations. Some students identified as at-risk in academic and/or behavioral areas respond successfully to modifications made to everyday instruction (i. e., tier one instruction), while others require more individually tailored instruction (i. e., tier two and tier three interventions, see below). Those who do not respond will be closely monitored to determine whether or not additional levels of support are needed.

Rapid response. RTI delivers specialized services immediately when evidence of inadequate academic or behavioral performance is discovered, instead of waiting for students to fall significantly below benchmarks before intervening, as practiced under the discrepancy model (Fuchs, Mock, Morgan, & Young, 2003). With RTI's 'rapid response' method, teachers detect and intervene as soon as they notice a difference in daily performance, preventing unnecessary disability classification.

Interventions matched to needs. RTI utilizes a multi-tiered model of intervention, with the three-tiered model being the most commonly recognized. The purpose of the multi-tiered model is to provide increasingly intense levels of support and more frequent progress monitoring to help students meet grade level expectations. The tiered service model empowers educational professionals to provide the appropriate level of support to students who need it. Fluidity between tiers allows each student to receive the level of support they require, while also remaining flexible enough for the intensity of the intervention to change, as needed.

Tier one interventions are universal and evidence-based. They encompass all school-wide and class-wide instruction, serve all students, and are commonly thought of as a school's core curriculum (NASDSE, 2006; Shores & Chester, 2009a). Students who do not meet educational standards with only tier one instruction will also receive tier two interventions. Tier two interventions are provided immediately for students identified by screenings and progress monitoring as needing additional support. They typically occur with small groups and include instructional strategies specifically targeted to students' needs. The rapid response of tier two interventions may be enough for students to no longer require additional supports. For a few students, the combination of tier one and tier two interventions will be insufficient; therefore, tier three interventions will be provided. Tier three interventions are intensified, individualized, and frequently monitored. RTI incorporates the use of evidence-based instructional strategies for both behavioral and academic interventions at all three tiers. Evidence-based interventions include positive behavioral interventions and supports (PBIS), direct instruction, and peer tutoring.

Progress monitoring. Progress monitoring determines a student's ongoing level of performance. Data obtained through progress monitoring provides educators with the evidence they need to evaluate the effectiveness of interventions at all three tiers. Data drives decision making and gives educators the information they need to determine if interventions should be continued, modified, or stopped to allow for the implementation of an alternative intervention (McCook, 2006).

Decision Rules. Decision rules are school-wide, agreed upon procedures that guide RTI implementation. Every school's unique set of characteristics guides its goals, values, and educational style. Given this, it is necessary for schools to implement RTI in a way that is

conducive to their individuality. Decision rules give each school the flexibility to create an RTI program that suits the needs of its students and staff, increasing sustainability.

History of SAM

SAM emerged from an eight-year research partnership between the University of Kansas (KU) and White Church Elementary School in the Kansas City, Kansas School District (USD 500). When the research project began, White Church served students from a variety of ethnic and cultural backgrounds and over 80% of students were considered economically disadvantaged (Sailor, 2009). As with other schools in USD 500, White Church was chronically low-performing and had been targeted for school restructuring in 2000.

Researchers from KU hypothesized that merging a variety of educational sources would increase the effectiveness of instruction and, as a result, raise the academic outcomes of students in all subgroups. Through work in White Church researchers planned to “construct a fully integrated universal design application that might be replicable in schools elsewhere in the country” (Sailor, 2009, p. 140). Over the next several years, White Church transformed its school culture to ensure that all students received the support they needed in to be successful in general education. Critical cultural changes at White Church included implementing Positive Behavioral Interventions and Supports (PBIS), inclusive educational practices, data-driven decision-making, and evidence-based intervention (Sailor, 2009).

The emergence of a positive school culture (i.e., enculturation), improvements in instructional practices, distributed leadership, and enhanced community collaboration resulted in increased academic performance of students at White Church. Students in all subgroups, including students with disabilities, approached 100% proficiency in mathematics and reading in

just five years after the research project began. In 2005, White Church became the highest performing school in state of Kansas and President George W. Bush recognized it as one of the top two hundred schools in the U.S.

The success of White Church caught the attention of another chronically low-performing district across the country. In 2003, the Ravenswood City School District in East Palo Alto, California was ranked as the second lowest performing district in the state, requiring reform. Ravenswood was and is classified as an elementary-only district, then serving approximately 4,500 pre-K through eighth grade students in 12 schools. Similar to White Church, a majority of students in Ravenswood qualified for free-and-reduced lunch and approximately 90% were ethnic minorities (Sailor & Roger, 2007; Sailor, et al., 2006).

Ravenswood began implementing SAM in all 12 of its schools in 2003. When implementation began in Ravenswood, SAM creators felt it was important to specify the most vital components of SAM and create a tool to assess each school's fidelity of implementation to these components. The SAMAN (Sailor & Roger, 2005) was created to monitor program implementation fidelity. (The SAMAN will be discussed in greater detail in Chapter 3.) SAMAN results revealed that Ravenswood fully embraced the guiding principles of SAM and the cultural shifts associated with it, reaching "enculturation," a theoretically sustainable level of implementation, in 2010. Academic achievement improved as SAMAN scores improved and standardized state assessment scores reveal that Ravenswood is currently approaching the California state average.

Educational Policy

Improvements made at White Church and in Ravenswood have tremendous implications for low-performing schools across the county. However, successful school reforms cannot sustain unless supported by educational policy. For SAM to have a broader impact, it must align with national educational policies. Because one of the primary goals of SAM is to combine school resources to benefit all students, it is important to align SAM with policies stemming from both general and special education.

Elementary and Secondary Education Act (ESEA). General education is guided by ESEA. In 2002, Congress amended ESEA and reauthorized it as the No Child Left Behind Act (NCLB). The primary focus of NCLB has been to close academic achievement gaps by providing all students with a high-quality education. The six core principles that have guided the implementation of NCLB include accountability, highly qualified teachers, scientifically-based intervention, local flexibility, safe schools, and parent participation and choice (Turnbull, Stowe, & Huerta, 2007). Under NCLB, states have been required to establish statewide academic standards and an assessment system to track school's annual academic performance. NCLB mandated that all students in the U.S. reach proficiency in reading and mathematics by the year 2014. Each year public schools have been required to meet adequate yearly progress (AYP) targets to ensure advancement toward the 2014 proficiency goal. If schools did not meet AYP targets for two or more consecutive years, they faced federal sanctions.

NCLB has created increased accountability standards for America's schools. However, the act has not been immune to criticism. Critics argue that NCLB regulations have caused a narrowing of the curriculum to focus instructional time primarily on tested areas, resulting in decreased time for physical education, music, art, and other untested areas (Amrein-Beardsley,

2009; Rohrer, 2005; Smyth, 2008). NCLB has also been criticized for sanctioning schools and teachers for failing to meet AYP targets without considering the challenges associated with various student populations (Jimerson, 2007; Krieg, 2011; Rose, 2004; Smyth, 2008). The U.S. Department of Education, under guidance from the Obama administration, submitted *A Blueprint for Reform* in March of 2010 in an effort to transform NCLB. The key priorities of the *Blueprint* included college- and career-ready students, great teachers and leaders in every school, equity and opportunity for all students, raising the bar and rewarding excellence, and promoting innovation and continuous improvement (U.S. Department of Education, 2010). The Obama administration has yet to pass the *Blueprint for Reform* into law, making NCLB the country's current educational legislation. However, the stigma associated with NCLB has persuaded the Obama administration to return to calling the policy ESEA. For the purposes of this study, the terms NCLB and ESEA will be used interchangeably to represent general education policy.

Individuals with Disabilities Education Act (IDEA). The second educational policy important to this study is IDEA, which guides special education. When Congress enacted the Education for All Handicapped Children Act of 1975, which was later reauthorized as IDEA, its primary purposes were to ensure all children with disabilities access to free appropriate public education, to protect children and their families in securing such an education, to assist local education agencies, and to assure the effectiveness of state and local efforts (Turnbull, et al., 2007). The core principles of IDEA include zero reject, nondiscriminatory evaluation, appropriate education, least restrictive environment, procedural due process, and parent participation. Through these principles, IDEA hopes to achieve four national policy outcomes related to persons with disabilities, including independent living, economic self-sufficiency, full participation, and equal opportunity.

Researchers indicate that there are positive outcomes for students with disabilities when included with their typically-performing peers in daily educational activities (Artiles, Kozleski, Dorn, & Christensen, 2006; Ryndak, Ward, Alper, Montgomery, & Storch, 2010; Ryndak, Ward, Alper, Storch, & Montgomery, 2010). Both IDEA and ESEA have begun to respond to this research by progressively aligning key priorities and goals with the evidence. When IDEA was reauthorized in 2004, one of its goals was to align its core principles more closely with those of NCLB. While the two acts still do not overlap completely, the 2004 reauthorization of IDEA made special education policy resemble general education policy more than ever before. IDEA's principle of appropriate education is similar to NCLB's principles of accountability, highly-qualified teachers, and scientifically-based instruction. The IDEA principle of zero reject relates to NCLB's discipline provisions outlined in the principle of school safety (Turnbull, et al., 2007). General education policy also appears to be incorporating the core principles of IDEA as it makes plans for reauthorization. The 2010 *Blueprint for Reform* recognizes the unique needs of diverse learners and outlines a plan to provide challenging curricula to all students, add extra supports where needed, and increase inclusive programs. The *Blueprint* also promises to fund innovative programs that improve outcomes for students with disabilities (U.S. Department of Education, 2010).

SAM and Educational Policy

Although IDEA and ESEA are aligning, current school practices often do not reflect inclusive school environments. To help schools create a culture that is both supportive of inclusion and directed to enhancing academic achievement for all students, the creators of SAM chose six guiding principles of implementation based on what research and federal educational policies indicate are the primary agents needed to support school reform. The six guiding

principles of SAM include: (1) general education guides all instruction; (2) all school resources are configured to benefit all students; (3) schools proactively address student social development and citizenship; (4) schools are democratically organized, data-driven, problem-solving systems; (5) schools have open boundaries in relation to their families and communities; and (6) schools enjoy district support for undertaking extensive systems change (Sailor & Roger, 2005; Sailor & Roger, 2007; Sailor, et al., 2006). This section will review the research literature and educational policies as they relate to the six guiding principles of SAM implementation.

SAM Guiding Principle 1: General education guides all instruction. The goal is to ensure that all instruction is guided by the standards, curricula, and expectations of general education. An obstacle to this goal is a separation of educational services for students with disabilities since the development of special education (Dorothy Kerzner Lipsky & Gartner, 1996; McLeskey & Waldron, 2006; Slee, 2011; Wang, Reynolds, & Walberg, 1988). Researchers recommend including students with disabilities in general education to improve their academic and behavioral outcomes (Freeman & Alkin, 2000; Larsen, 1977; Dorothy Kerzner Lipsky & Gartner, 1996; Sailor & Roger, 2005; Sharpe, York, & Knight, 1994; Slee, 2011).

Special education has historically extended the medical model into schools (Sailor, Doolittle, Bradley, & Danielson, 2009). Labels, categories, and classifications lodge problems of learning in the individual. They are used to describe student deficiencies which, in turn, are presented to lead to prescriptive solutions. It is common for students with disabilities to be placed in classrooms separate from general education to receive individualized and intense support.

Currently, there is conflict among educational experts about the optimal way to educate students with disabilities and provide special education services. On one side, researchers conclude that students with disabilities profit most from standard treatment protocols (i. e., scientifically-based interventions implemented with fidelity over a fixed amount of time) (Fuchs & Fuchs, 2006). Frequently, standard treatment protocols involve removal of students with disabilities from general education (Fuchs & Fuchs, 2006). Experts on this side of the debate support the segregation of students with disabilities, believing that this is the necessary structure for providing students with more individualized and intensive support.

Researchers on the other side of the debate point to research findings demonstrating positive outcomes for students with disabilities when integrated with typically-performing peers. These researchers express concerns about the implications of segregating students with disabilities, particularly related to human rights guaranteed by the Fourteenth Amendment, legal precedents, and ethical concerns (Dorothy Kerzner Lipsky & Gartner, 1996; Dorothy Kerzner Lipsky & Gartner, 1997).

Inclusion (i. e., placing special education students with peers in general education classrooms for part of the school day) and full inclusion models (i. e., incorporating special education students as full members of general education classrooms) emerged as methods for reforming schools and to address concerns related to segregated special education classrooms. Early research on inclusion models demonstrated that students with disabilities participated more in instruction when included in general education classrooms. However, students with disabilities often gained limited access to the general education curriculum (Agran, Alper, & Wehmeyer, 2002; Ryndak, Moore, Orlando, & Delano, 2008-2009). Educators provided students with disabilities only *physical* access to typically-developing peers, but paid little regard

to educational goals and outcomes (Sailor, 2002). Overall, inclusion models have not fully integrated students with disabilities into the curricula, activities, and standards of general education. This ineffective implementation of inclusion led many to believe that full integration into general education could not provide students with disabilities an appropriate education as required by IDEA (Fuchs & Fuchs, 1994). However, more recent research suggests the contrary; students with disabilities, regardless of classification or severity of need, benefit from integration (Freeman & Alkin, 2000; Larsen, 1977; Sailor & Roger, 2005).

SAM guiding principle one is based upon a philosophy of full inclusion. However, it differs in practice from traditional inclusion models in two important ways. The first difference is SAM is a school reform model, not a special education placement model. Traditional inclusion models center on *placing* students with disabilities in general education classrooms. Little work is done to restructure school resources, personnel, and schedules to incorporate the standards, curricula, and activities of general education into the educational goals of students with disabilities (Kavale, 2002; Sailor, 2002). SAM, on the other hand, recognizes that full integration cannot be successful without a shift in school culture. SAM reorganizes school schedules, adjusts the roles and responsibilities of school personnel, and pools school resources to support the transition of students with disabilities from segregated to integrated settings. SAM also recognizes that the dramatic shifts in school culture needed to support full inclusion take time to cultivate. To support schools through this process, SAM includes bi-yearly evaluations and ongoing technical assistance focused on areas of need.

The second difference between SAM and traditional inclusion models is SAM's incorporation of the RTI framework. RTI matches interventions to measured needs, regardless of disability classification, income level, racial/ethnic background, or other risk factors.

Traditional inclusion models focus primarily on the outcomes of students with disabilities. SAM, on the other hand, universally screens students and provides evidence-based interventions as soon as students fail to meet grade level expectations regardless of qualification for special education. RTI prevents automatic referral of students for special education because it allows teachers to intervene early and provide evidence-based interventions as soon as students fail to meet grade level expectations. SAM's RTI framework, therefore, prevents students from falling significantly behind and decreases the likelihood that they will require special education services unless significant disability is present. Traditional inclusion models do not include provisions for preventing unnecessary disability classification. They focus primarily on students who already qualify for special education, excluding provisions for preventing disability classification.

SAM guiding principle one requires general education to guide all instruction. In SAM schools "all students with IEPs are members of age-appropriate, grade-level classrooms, and they attend all non-classroom functions with their classmates" (Sailor & Roger, 2005, p. 507). SAM requires provision of services, not only to students with specific qualifying characteristics, but to any student who fails to meet general education standards at grade level. Specialists, such as speech language pathologists and occupational therapists, work in cooperation with general educators to ensure that all students have the supports they need to be successful in general education. Instead of pulling students who have specific qualifying characteristics out of general education to deliver services, specialists in SAM schools work closely with general education teachers to provide interventions to any student who can benefit. Small group as well as individualized instruction support the general education curriculum and are offered to any student.

Both IDEA and ESEA support inclusive educational programs. The IDEA principle of least restrictive environment (LRE) is based on over 30 years of research demonstrating that children with disabilities are more successful when provided access to general education curricula (Turnbull, et al., 2007). The LRE provision requires children with disabilities to be educated in regular settings with typically-developing peers “to the maximum extent possible” (20 U.S.C. Sec. 1412(a)(5)(A)). Removal from the general education classroom is only permitted if a satisfactory education cannot be achieved there, even with supports and adaptations. SAM guiding principle one reinforces the principle of LRE by fully integrating students with disabilities into general education. Critics of inclusive models argue that students with specialized needs will not receive sufficient support in general education. This fails to recognize that students in SAM schools receive support in small groups or one-on-one with a specialist when needed. However, students’ primary placement remains general education and all work is based upon its standards and curricula. SAM adapts the school schedule, resources and teacher roles to allow general education to be every student’s LRE.

The ESEA *Blueprint for Reform* also supports SAM guiding principle one. The *Blueprint* sets a clear goal: Every student should graduate from high school ready for college and/or career. To achieve this goal the *Blueprint* plans to fund programs that improve achievement by addressing persistent academic achievement gaps between students in all subgroups (U.S. Department of Education, 2010). SAM guiding principle one addresses academic achievement gaps by providing all students with evidence-based interventions as soon as they are identified as academically at risk. SAM increases the likelihood that all students, regardless of disability classification or severity of need, are successful in school and remain on track to graduate college and/or career ready.

SAM Guiding Principle 2: All school resources are configured to benefit all

students. The goal of SAM guiding principle two is to reorganize school resources so that all students receive the services and supports they need to be successful. An obstacle to this goal is a traditional “siloization” of educational departments, creating a division of school funding, resources, and services among various classification groups (Artiles, et al., 2006; Fuchs, Fuchs, & Stecker, 2010; Sailor, Wolf, et al., 2009). Research suggests combining all school resources, including special education, for the benefit of all students (Sailor, Wolf, et al., 2009). SAM guiding principle two is based upon this research.

Specialized educational programs, such as Title I, English language learner programs, and special education each have independent funding streams and services. In order to receive specialized services, students must meet specific qualification guidelines. For example, for a student to receive special education services, he or she must be identified and classified with a disability. Students who do not fit into specific disability categories do not obtain access to specialized services that would aid in their academic or behavioral development even when they fall below benchmark. Consequences exist for students with and without disabilities when resources and supports are divided. Students placed in special education environments often lack access to the same educational standards, curricula, and expectations of students in general education (Dorothy Kerzner Lipsky & Gartner, 1996). This raises two primary concerns. One, because lessons may not be based upon the same academic standards as students in general education, students with disabilities are often unable to meet academic accountability standards mandated for all students by ESEA. Consequently, schools find it more difficult to meet AYP targets. Two, research shows that students with disabilities typically remain in special education

for the duration of their K-12 career, making it more difficult to find high-quality employment after leaving school (Yell & Shriner, 2005).

Inclusive education models are often criticized for concentrating educational resources and instructional time on students with disabilities, reducing the quality of instruction provided to students without disabilities. However, research suggests that students without disabilities experience no adverse effect to their academic or behavioral performance when placed in inclusive settings (Artiles, et al., 2006; Sharpe, et al., 1994). In fact, students in general education can suffer when educational systems are divided. Many specialized services are reserved for students with diagnosed disabilities. Students without disabilities often lack access to services even if they could aid in development.

SAM guiding principle two reorganizes school structures and combines school resources so that all students can benefit from the specialized services offered at their school. Under an RTI framework, SAM schools universally screen students and provide specialized services to any student who falls below benchmarks, regardless of disability classification or need area. SAM schools pool resources from a variety of sources to be used to benefit any student who needs additional support including early intervening services (EIS) provisions of ESEA which allow up to 15% of special education budgets available to schools to be directed to prevention of need for identification for special education.

Both IDEA and ESEA support the success of all students, regardless of risk factors. The 2004 reauthorization of IDEA includes not only the EIS provisions of ESEA, but supports “incidental learning” practices that allow typical peers to participate in special education interventions alongside identified students. The IDEA principle of appropriate education further supports SAM guiding principle two. Under IDEA, an appropriate education is one in which a

student progresses toward the four national policy outcomes of equal opportunity, full participation, independent living, and economic self-sufficiency (Turnbull, et al., 2007). Streamlining school resources for the benefit of all students, not just those with disabilities, increases the likelihood that schools will provide every student, including those with disabilities, an appropriate education.

The ESEA *Blueprint for Reform* goal three, equity and opportunity for all students, aligns with SAM guiding principle two. The *Blueprint's* goal is to provide rigorous and fair accountability systems at all levels, meet the needs of diverse learners, and increase equity. To achieve these goals, the *Blueprint* promises to increase support and funding to inclusive education programs that find ways to meet the needs of English language learners, students with disabilities, and other students at risk for failing to meet educational benchmarks. SAM guiding principle two encourages schools to break down the separation between programs and offer specialized services to any student who can benefit from them.

SAM Guiding Principle 3: Schools proactively address student social development and citizenship. The primary goal is to incorporate behavioral objectives and social instruction into daily operations of schools. Obstacles to achieving this goal are the federal AYP mandates, which do not require schools to report on social and behavioral outcomes (Sailor, Stowe, Turnbull, & Kleinhammer-Tramill, 2007); rather with AYP mandates instructional time is solely focused only on academic content areas tested on standardized state assessments (Agran, et al., 2002; Rothstein, Jacobsen, & Wilder, 2008). Research shows there is a connection between behavioral and academic outcomes (Colvin, Sugai, Good, & Lee, 1997; Putnam, Handler, Ramirez-Platt, & Luiselli, 2003; Sailor, Doolittle, et al., 2009). Students exhibiting problem behavior are frequently excluded from class activities, and their behaviors can disrupt time for

teaching and learning (Sugai & Horner, 2006). It is common practice for schools to use punishment, zero-tolerance policies, and exclusion to create more orderly learning environments and teach students that unruly behavior is unacceptable (Lassen, Steele, & Sailor, 2006; Sugai & Horner, 2006; Utley, Kozleski, Anne, & Draper, 2002). Unfortunately, while punishment and exclusion eliminate problem behavior immediately, evidence indicates these discipline procedures often lead to more frequent and intensified disruptive behavior over the long-term (Lassen, et al., 2006; Noguera, 1995; Sugai & Horner, 2002).

Because of this evidence, schools that wish to increase academic outcomes must simultaneously craft a plan for increasing behavioral outcomes. Evidence suggests student achievement improves when educators reinforce positive behavior, understand why problem behavior occurs, teach replacement behaviors, and teach citizenship skills (Rothstein, et al., 2008; Sailor, et al., 2007). SAM guiding principle three is based on this research. A growing body of research supports the use of preventive and proactive approaches as alternatives to reducing problem behavior (T. J. Lewis, Powers, Kelk, & Newcomer, 2002) and increasing academic achievement (Lassen, et al., 2006). Positive behavioral interventions and supports (PBIS) is a continuum of supports focused on prevention, data-based decision making, and evidence-based interventions.

The key features of PBIS include:

(a) a prevention-focused continuum of support, (b) proactive instructional approaches to teaching and improving social behaviors, (c) conceptually sound and empirically validated practices, (d) systems change to support effective practices, and (e) data-based decision making (Sugai & Horner, 2002, p. 131).

The goals of PBIS are to understand the causes of student problem behavior, teach desired replacement behaviors, and reinforce positive behavior. Schools achieve these goals by setting

school-wide behavioral expectations and providing increasingly intensive tiered supports to students who are not meeting expectations.

SAM guiding principle three holds that increases in academic achievement are only possible when schools simultaneously establish a system to address student behavior. SAM schools, particularly those in high poverty areas, apply a school-wide PBIS (SW-PBIS) framework to manage student behavior. IDEA and ESEA do not include specific provisions for social and behavioral instruction, but both policies address school discipline. IDEA's principle of zero reject maintains that States have an obligation to provide a "full educational opportunity to all children with disabilities," including those who violate their school's code of conduct (20 U.S.C. Sec. 1412(a)(2)). IDEA requires local education agencies (LEAs) to apply the same discipline policies to students with and without disabilities (20 U.S. C. Sec. 1415(k)(1)). However, if an LEA seeks to remove a child with a disability from school for more than 10 school days, a "manifestation determination" must be conducted to determine if the behavior(s) that lead to the child's exclusion from school was a manifestation of the disability. If the behavior is determined to be a manifestation of the disability, the LEA must take steps to improve its implementation of the child's individualized education program (IEP). IEP teams are also mandated under IDEA to consider the use of positive behavioral interventions and supports to address behavior that impedes the child's learning or that of others (20 U.S.C. Sec. 1414(d)(3)(B)). SAM reinforces the principle of zero reject by requiring schools to implement SW-PBIS. Under SW-PBIS, schools conduct functional behavioral assessments (FBA) to understand the causes of problem behavior and identify possible triggers for students who violate school codes of conduct. Behavioral interventions are provided at varied levels of intensity and frequency based on results of the FBA. In the process, students learn alternative replacement

behaviors, decreasing the likelihood that students will engage in future rule violations and increasing students availability for learning.

The NCLB principle of safe schools also directly relates to school discipline procedures. The safe schools principle establishes that effective teaching and learning can only occur in safe school environments (Turnbull, et al., 2007). SAM guiding principle three addresses social and behavioral needs by establishing SW-PBIS to teach and reinforce positive behavior. SAM's positive approach to school discipline increases the likelihood that students will meet behavioral expectations and remain safe in school.

SAM Guiding Principle 4: Schools are democratically organized, data-driven, problem-solving systems. The goal of SAM guiding principle four is two-fold. One, SAM schools use data to guide teams and coaches in the decision making process. Two, all school personnel in SAM schools are involved in instructional practices. An obstacle to these goals is that many schools are governed by top-down leadership models and offer teachers few opportunities to be involved in school decision-making (DuFour, 2007). Based on their findings, researchers recommend empowering professionals to become active participants in school reform processes and use data to inform practice (Desimone, 2002; Elmore, 2004; Fullan, 2008; Knight, 2009; Payne, 2008; Shores & Chester, 2009b; Spillane, Halverson, & Diamond, 2001; Togneri & Anderson, 2003).

School reforms have been shown to be most successful when professionals have ownership over change and choose to be involved (Payne, 2008). Desimone's (2002) research on successful implementation of comprehensive school reform supports this idea; she concludes that teachers are the key component of the success of any effort aimed at fundamental school change. Leaders who empower professionals to become active participants in the change process

have greater success in implementing and sustaining reform programs such as SAM. In fact, Sailor found that “schools for which the reform model resonates get the best results as a model becomes enculturated at the site” (Sailor, 2009, p. 137). Mandated reform may achieve employee compliance, but will not establish change that is rooted in the day-to-day workings of an organization (Payne, 2008). Without support from school personnel, who serve as key implementation officers, a sustainable SAM program is not possible.

To have any hope of increasing academic outcomes, schools must use data to guide instruction. Multi-tiered systems of instruction, such as school-wide application of RTI , provide a framework for data-driven processes. Brown-Chidsey and Steege (2005) note that in schools utilizing an RTI framework “... no decisions are made without evidence to support them” (pg 5). SAM schools create site leadership teams and school-centered planning to analyze student-, school-, and district-level data to guide instructional decision making.

SAM guiding principle four also guides schools to nurture the strengths of all school personnel. SAM schools consider all school personnel important agents in the teaching/learning process (Sailor & Roger, 2005). Tapping into the strengths of all salaried school personnel maximizes the collective capacity of the professional staff. In SAM schools, custodians, psychologists, librarians, cafeteria workers, office personnel, and all others are involved in the school-wide expectations and instructional goals of the school. For example, the school custodian can serve as a mentor to a student requiring additional behavioral supports. An occupational therapist co-teaches lessons in a first grade classroom emphasizing strategies for pencil holding to increase writing outcomes.

Both IDEA and ESEA require the use of evidence-based practices and data collection to document student outcomes and guide instructional decision making. The reauthorization of IDEA in 2004 incorporates three elements of evidence-based practice (Brown-Chidsey & Steege, 2005). First, schools are required to use evidence-based reading instruction. Second, schools must provide evidence about how well a student responds to intervention. Third, schools must use data to guide decision-making. All three elements of effective evidence-based practice are intertwined into RTI and SAM. SAM schools screen students for academic and behavioral risk and continuously progress-monitor students, providing evidence about student response to intervention and aligning with IDEA. Data-based decision-making is also an integral part of SAM. Teams of school personnel work together to monitor student progress and create intervention plans as needed, supporting IDEA.

NCLB also requires professionals to employ evidence-based practices. Under NCLB, schools are required to use programs with an evidence base, monitor students' progress, and use data to guide instruction. Mandated standardized state assessments began in an effort to require schools to track student progress. Although state assessments have been criticized for being ineffective at directly impacting instruction, they have forced schools to take a closer look at student progress through data collection. The ESEA *Blueprint for Reform* goal four promises to fund states and school districts that are willing to take on "bold, comprehensive reforms" (U.S. Department of Education, 2010, p. 6); for example, the U.S. Department of Education offers grants to states and schools to expand evidence-based programs that improve student outcomes in more than one area. Special priorities are given to programs that meet the unique needs of students with disabilities. SAM guiding principle four requires schools to use data to make

decisions and changes the culture of schools to support the full inclusion of students with disabilities.

SAM Guiding Principle 5: Schools have open boundaries in relation to their families and communities. The goal is to go beyond traditional parent/teacher organizations and business partnerships to actively engage families and the community in educational processes. An obstacle to this goal is that schools and teachers often do not reach out to families and community organizations in a way that encourages them to get involved (Sheldon, 2003). Researchers recommend actively involving families and communities in student learning to increase student achievement (Ingram, Wolfe, & Lieberman, 2007; Jeynes, 2005; Sheldon, 2003; Sheldon & Epstein, 2005) and promote sustainable school reform (Bryk, et al., 2010; Payne, 2008; Sailor, 2009).

There is little debate about the importance of parental involvement in improving student outcomes. Parental involvement has been linked to higher graduation rates, increased school attendance, enhanced student motivation, and improved student achievement (Fan & Chen, 2001; Gonzalez-DeHass, Willems, & Holbein, 2005; Ingram, et al., 2007; Sheldon, 2003; Sheldon & Epstein, 2005; Warren, Nofle, Ganley, & Quintanar, 2011). However, specific types of parental involvement, such as building parental capacity, encouraging at-home learning activities, and fostering parental aspirations/expectations, have been shown to make the most positive impact (Fan & Chen, 2001; Hampton, Mumford, & Bond, 1998; Jones, 2001; Sheldon & Epstein, 2005).

Researchers have shown that the method schools use for including parents in schools impacts student outcomes. First, schools must make a concerted effort to involve *all* families, not solely those easiest to reach (Epstein, 2005). Families may feel intimidated by school

officials or not understand the importance of their role, causing them to choose not to interact with school officials. Therefore, schools must be responsible for fostering parental partnerships. Sheldon (2003) notes that “when teachers reach out to families and make them feel comfortable and capable of promoting their children’s education, parents are likely to become more involved in helping their children succeed in school” (p. 150). Casual relationships between schools and families will not yield significant gains in student outcomes. Direct efforts to include families are essential.

Fostering parental involvement has been shown to be especially effective in urban schools (Ingram, et al., 2007; Jeynes, 2005; Sheldon, 2003; Warren, et al., 2011). Sheldon’s (2003) study of 82 elementary schools reveals that “when schools in low-income, urban neighborhoods establish programs of partnerships and work to reach out to all families and the community, students are more likely to perform at higher levels on state-mandated achievement tests” (p. 163). Nurturing parental involvement in urban schools, however, does not come easily. Urban schools often face language barriers, cultural differences, and economic circumstances that make it difficult for families to regularly attend school events. However, Hattie’s (2009) meta-analysis of studies related to parental involvement discovered that “it is not so much the structure of the family [e.g. single or two-parent families, families with resident or non-resident fathers, divorced parents, adopted or non-adopted children, or only children and non-only children], but rather the beliefs and expectations of the adults in the home that contributes most to achievement” (p. 71). Often times, teachers lack the insight and experience needed to nurture their connections with families, teach parents about setting appropriate educational expectations, and empower them to get involved. Ingram, Wolfe, and Lieberman (2007) recommend schools

invest in training to help faculty and staff build their capacity and confidence in working with families.

Epstein (2005) agrees. She points out that NCLB requires states, districts, and schools reach out to families. To do so effectively requires districts to employ professional development to build the capacity of teachers, as well as parents, to create meaningful partnerships. Unfortunately, it is common for urban schools to have limited resources to dedicate to parent outreach and professional development. Schools must make parental involvement a school-wide priority and intentionally allocate resources to encourage parents to get involved.

Nurturing community-school relationships is also an important part of school reform aimed at increasing student achievement. Michael, Dittus, and Epstein (2007) report that family and community involvement have been linked to strong academic achievement, increased school attendance rates, and improved school discipline and behavior. Sanders (2003) found that community-school partnerships can increase student social capital, help schools produce a more capable workforce, and promote U.S. economic competitiveness. It seems clear that schools can increase positive student outcomes by involving community members and organizations in school process. In order for this to happen, Ingram, et al, (2007) argues that schools must take an active role in recruiting community support. "...Schools need to take the lead in rallying community resources to assist families in obtaining health, nutrition, employment, and adult educational services" (Ingram, et al., 2007, p. 494). Unfortunately, many schools are not doing some of the fundamental things to increase community involvement (Michael, et al., 2007).

SAM guiding principle five sets the parameters for schools to have open boundaries with their families and communities. SAM recognizes that home, family, and community are key

players in the teaching and learning process. Sharing of information with families and communities is only one aspect of involvement in SAM schools. SAM schools empower parents, community members, and organizations to actively participate in educational processes at the school-wide level.

Both IDEA and ESEA support parental participation. IDEA notes that “almost 30 years of research and experience has demonstrated that the education of children with disabilities can be made more effective by ... strengthening the role and responsibility of parents and ensuring that families of such children have meaningful opportunities to participate in the education of their children at school and at home” (20 U.S.C. Sec. 1400(c)(5)(B)). IDEA includes the principles of procedural due process and parental participation as a means of checks and balances between SEAs, LEAs, and parents or guardians (Turnbull, et al., 2007). Procedural due process provisions serve as a way for parents or guardians to hold schools accountable for the education of their children. The parental participation principle establishes that parents or guardians of children with disabilities have a right to participate in evaluation and IEP teams that make decisions related to their child’s education (20 U.S.C. Sec. 1414(c) & (d)). While IDEA establishes rights for parents of students with disabilities, it also imposes the responsibility of parents and guardians to become active partners in their child’s educational planning process. SAM schools take an active role in soliciting families to become partners in the teaching and learning process.

NCLB also includes a system of checks and balances between parents and schools. Under NCLB, parents are granted the power of choice when their child’s school is deemed unsafe or insufficient in meeting federal AYP targets. If a State and LEA determines that a school is an unsafe environment, parents have the option to move their child to a safe school

within the LEA (20 U.S.C. 7912 Sec. 9532(a)). NCLB states that effective parental involvement must focus on lowering barriers to parental participation in school planning, reviews of programs and school improvement (20 U.S.C. 6301 Sec. 1111 (d)(2)).

SAM Guiding Principle 6: Schools enjoy district support for undertaking extensive systems change. The goal of SAM guiding principle six is to garner district-level support prior to implementation to aid in enculturation and sustainability. An obstacle to this goal is that school districts often operate under traditional bureaucratic management structures that have little experience with school-wide reform models (Elmore, 2004; Sailor & Roger, 2005). Scholars who study school reform recommend securing support from leadership to aid in the development and sustainability of organizational change (S. E. Anderson & Togneri, 2005; Boyd, Kerchner, & Blyth, 2008; Copland, 2003; Kotter, 1996; Payne, 2008; Shores & Chester, 2009b).

School reform efforts repeatedly show promising results during the initial stages of implementation, but changes often fade over time and fail to go to scale (Elmore, 1996, 2004; Kahne, Sporte, de la Torre, & Easton, 2008; Payne, 2008; Tyack & Cuban, 1995). Although many factors contribute to sustainable school reform, strong and stable leadership is frequently cited as an important characteristic (Fullan, 2000; Payne, 2008). Leadership at the district level is especially important to implementing and sustaining school reform. Without district-level support, individual schools choosing to embrace change will likely encounter roadblocks that hinder progress. Districts play a key role in creating a vision for change, providing relevant professional development, updating policy to support reform efforts, and allowing enough time for reform efforts to develop (Payne, 2008; Sailor, 2009). Anderson and Togneri (2005) point out that “district-level decisions and actions can, in fact, make a difference in the quality of

teacher and student performance and in the implementation of change at the school level” (p. 176).

District support for school reform also has important implications for policy at the state and local level. State education agencies establish policies that hold local education agencies accountable for student performance. However, states often lack the capacity to intervene at the local level (S. E. Anderson & Togneri, 2005). This means that state-level reform policies are mediated through district-level personnel, practices, and policies. To have any hope of influencing instructional practices at the district- and school-level, state educational policies must be supported by district-level policies.

Sustainable reform efforts are also reliant upon policy changes occurring at the local level. In order for large scale changes to occur, districts must be willing to revise existing policies that work against reform efforts. Sailor (2009) notes that “...launching an RTI initiative at the district level requires careful attention to all policy implications. In some cases, existing policy interpretations may need to be revisited and updated” (pp. 192-193). Without support, individual schools embracing change may run into policy barriers at the district level that can stymie progress. Districts must be willing to refine policies to support reform efforts.

SAM guiding principle six requires schools to gain district-level support of SAM implementation before initiating change. The creators of SAM note that “school-wide models such as SAM that offer a significant departure from traditional bureaucratic management and communication processes must have district support” (Sailor & Roger, 2005, p. 508). To support school-level change, SAM requires the addition of two teams at the district level. The district leadership team (DLT) examines and adjusts district policy to support SAM implementation.

The district resource team (DRT) manages requests for resources from SAM school principals and works with the DLT to determine whether or not to approve requests (Sailor & Roger, 2005).

NCLB established provisions for local flexibility. NCLB theorizes that states, districts, and schools have greater likelihood of achieving acceptable outcomes if they have the autonomy to choose how to use federal dollars (Turnbull III, 2005). Therefore, schools, districts, and states have the ability to make decisions about how they wish to use monies and resources to achieve NCLB's goals. SAM is one model that schools, districts, and states can choose to implement to comply with NCLB mandates.

Summary

Research on SAM, RTI, educational policy, urban education, and school reform provide the context for this study. Minimal research exists exploring the effectiveness of SAM in raising academic achievement. This study adds to the literature about SAM and its viability as a school reform model seeking to improve academic achievement in urban schools.

Chapter 3: Methods

Overview

The purpose of this study is to understand the effect of the Schoolwide Applications Model (SAM) on the academic achievement of students attending DCPS. The study used student data comparing the D.C. Comprehensive Assessment System (DC CAS) scores of students attending DCPS SAM schools with the DC CAS scores of students attending matched DCPS comparison schools that did not receive the SAM intervention. The study used between-subjects analysis of co-variance (ANCOVA) and repeated measures analysis of variance (ANOVA) analyses with one between-subjects factor and one within-subjects factor to examine academic achievement scores of students attending DCPS schools over three years of SAM implementation. The SAM Analysis System (SAMAN) was used to determine the fidelity of SAM implementation, allowing for the comparison of academic achievement of schools reaching high levels of fidelity, schools not reaching high levels of fidelity, and comparison schools. The study's research questions, participants, instruments, and data analysis are outlined in this chapter.

Research Questions

Based on research explored in the introduction and literature review, this study seeks to understand the relationship between SAM and academic achievement. The following primary and secondary research questions were explored:

1. Are there significant differences in the academic achievement of students attending SAM schools and students attending comparable schools that did not implement SAM?

To answer this question, several secondary questions were explored:

- What, if any, difference is there between the academic achievement of students attending SAM schools and students attending comparison schools that did not implement SAM prior to SAM implementation (2007-2008)?
 - What, if any, difference is there between the academic achievement of students attending SAM schools and students attending comparison schools that did not implement SAM in year one of implementation (2008-2009)?
 - What, if any, difference is there between the academic achievement of students attending SAM schools and students attending comparison schools that did not implement SAM in year two of implementation (2009-2010)?
 - What, if any, difference is there between the academic achievement of students attending SAM schools and students attending comparison schools that did not implement SAM in year three of implementation (2010-2011)?
2. What impact does SAM have on the academic achievement of students attending SAM schools during three years of implementation in DCPS?
 3. What is the connection between the fidelity of SAM implementation and academic achievement?
 4. What impact does SAM implementation have on the academic achievement of students qualifying for special education services during three years of implementation in DCPS?

Participants

The District of Columbia (DCPS). As discussed in Chapter 1, DCPS serves approximately 46,000 students in the urban area of Washington D.C. DCPS is comprised of 65 elementary schools, 14 middle schools, 16 high schools, 19 educational campuses, and 3 special education centers. Approximately 69% of students attending DCPS are black, 13% are Hispanic,

16% are white, and 2% represent another ethnicity. Sixty-one percent of students in DCPS qualify for free and reduced lunch, 18% qualify for special education, and 9% are English Language Learners (ELL) (District of Columbia Public Schools, 2012). In 2011, only 43% of students in DCPS were proficient in reading and mathematics, as measured by the DC standardized state assessment (The District of Columbia Office of the State Superintendent, 2011). Out of a total of 117 schools, 89 did not meet national AYP standards outlined by ESEA and were placed on improvement status, corrective action, or restructuring at the end of 2010 (District of Columbia Office of the Chancellor, 2010).

DCPS SAM Schools. There are two cohorts of SAM schools in DCPS. The *Blackman/Jones* case required DCPS to implement exemplary special education programs in a cluster of elementary schools. Prior to the start of the 2008-2009 school year, officials from DCPS sent a letter to all elementary school principals seeking interest in SAM. From the elementary schools who volunteered, district officials selected eight schools to implement SAM as Cohort 1. One of the eight schools was chosen due to its persistent segregation of students receiving special education services and direct involvement in the *Blackman/Jones* lawsuit. The other seven schools were chosen because they were among the lowest performing schools in the district. Implementation of SAM in Cohort 1 schools sparked the interest of other elementary school principals, prompting the expansion of SAM into eight additional DCPS schools the following year. School officials formed a wait list of interested schools and chose eight to begin SAM implementation in August of 2009 as Cohort 2. At the end of year two, one of the Cohort 1 schools withdrew from the SAM program, leaving seven SAM schools in Cohort 1 and eight schools in Cohort 2, for a total of fifteen SAM schools in DCPS.

The fifteen DCPS schools implementing SAM impact over 5,000 students. Thirteen of the fifteen SAM schools in DCPS serve a student population that is at least 95% Black and all but one serves at least 80% of students who qualify for free and reduced lunch. Fourteen of the fifteen SAM schools in DCPS were placed in improvement status in 2009 and twelve of those were placed in corrective action or restructuring status under ESEA that same year.

DCPS Comparison Schools. DC CAS data was also collected in eight DCPS elementary schools not implementing SAM to serve as comparison schools. Each of the DCPS SAM schools was matched demographically with a comparison school in DCPS to act as the control for the study. The seven comparison schools were chosen based on their similarity in enrollment, grade levels served, ethnicity, and free/reduced lunch rates to a DCPS SAM school. Including DCPS comparison schools in this study helps account for all other factors impacting academic achievement across the DC school district during the three years of SAM implementation. Comparison schools help isolate the effect of SAM versus business as usual in the district to determine its effectiveness in raising academic achievement.

Researchers suggest that school reform efforts require at least three years of implementation before positive effects can be observed. Therefore, only the seven Cohort 1 SAM schools were included in this study. The comparison school matched to the SAM school that withdrew from the program was also dropped from the study, leaving seven comparison schools. A total of fourteen schools were included in this study, seven SAM schools and seven matched comparison schools. Table 3.1 provides specific demographic information on each of the SAM Cohort 1 schools and matched comparison schools in DCPS. Table 3.2 tells the overall enrollment of SAM and comparison schools. Table 3.3 outlines the ESEA school improvement status, as well as reading and mathematics proficiency percentages, for each of the SAM and

comparison schools for the 2009 and 2010 school years. Figure 3.1 displays a geographic map of the DCPS SAM and comparison schools.

Table 3.1

SAM and Comparison School Demographics

School	Grade Levels	Enrollment (#)	Free & Reduced Lunch (%)	Special Education (%)	English Language Learners (%)	Race/Ethnicity (%)
SAM 1	3-6	365	89%	12%	0%	100% Black
Comp. 1	3-5	272	87%	14%	1%	99% Black; 1% Hispanic
SAM 2	3-8	400	74%	11%	32%	49% Hispanic; 48% Black; 3% White
Comp. 2	3-8	563	80%	9%	55%	66% Hispanic; 30% Black; 2% White; 1% Asian; 1% Multiple Race
SAM 3	3-5	373	71%	18%	0%	100% Black
Comp. 3	3-5	350	67%	7%	0%	98% Black; 1% Hispanic; 1% Multiple Race
SAM 4	3-6	293	86%	14%	0%	100% Black
Comp. 4	3-5	309	84%	11%	0%	97% Black; 2% Hispanic; 1% Multiple Race
SAM 5	3-5	520	13%	6%	14%	63% White; 16% Black; 10% Asian; 6% Hispanic; 4% Multiple Race; 1% Native/Alaskan
Comp. 5	3-5	324	14%	4%	30%	58% White; 14% Black; 14% Hispanic; 7% Asian; 7% Multiple Race
SAM 6	3-8	413	84%	12%	5%	96% Black; 3% Hispanic; 1% Pacific/Hawaiian
Comp. 6	3-8	463	83%	14%	1%	97% Black; 2% Hispanic; 1% White
SAM 7	3-5	391	85%	9%	0%	99% Black; 1% Hispanic
Comp. 7	3-5	191	84%	15%	2%	97% Black; 2% Hispanic; 1% White

Table 3.2

SAM and Comparison School Overall Enrollment

School	Total Enrollment (#)
SAM Schools	2,755
Comparison Schools	2,472

Table 3.3

SAM and Comparison School Improvement Status and Proficiency Percentages for 2009 & 2010

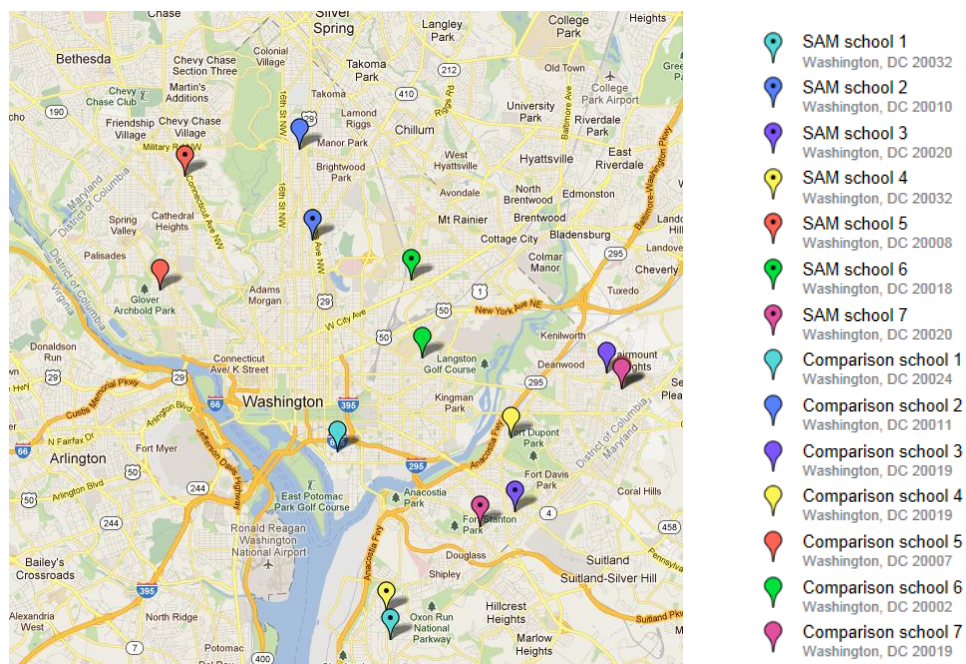
School	School Improvement Status 2010	School Improvement Status 2009	Reading Proficiency 2010 (%)	Reading Proficiency 2009 (%)	Math Proficiency 2010 (%)	Math Proficiency 2009 (%)
SAM 1	R Y2	R Y1	22.98%	48.46%	23.60%	37.69%
Comp. 1	R Y2	R Y1	29.75%	33.33%	24.05%	20.75%
SAM 2	R Y2	R Y1	36.73%	61.07%	36.05%	50.38%
Comp. 2	R Y1	CA	36.54%	47.12%	37.16%	48.17%
SAM 3	R Y1	CA	45.69%	40.60%	44.35%	41.35%
Comp. 3	CA	SI Y2	47.79%	62.42%	50.74%	75.80%
SAM 4	R Y1	CA	22.88%	28.46%	18.30%	27.69%
Comp. 4	R Y2	R Y1	40.71%	45.38%	46.90%	59.23%
SAM 5	None	None	86.91%	83.84%	80.21%	82.10%
Comp. 5	None	None	90.48%	74.55%	92.38%	80.00%
SAM 6	None	None	61.35%	84.71%	53.14%	63.69%
Comp. 6	R Y2	R Y2	19.05%	12.82%	16.67%	12.82%
SAM 7	R Y2	R Y2	12.71%	22.97%	8.47%	23.13%
Comp. 7	CA	SI Y2	19.54%	30.77%	14.94%	34.07%

Note. R Y2 = Restructuring Year 2, R Y1 = Restructuring Year 1, CA = Corrective Action, SI Y2 = School Improvement Year 2

Source. Public School Choice Guide 2010 (District of Columbia Office of the Chancellor, 2010).

Figure 3.1

Map of DC SAM & Comparison Schools



Instruments

Washington DC Comprehensive Assessment System (DC CAS). The DC CAS is the annual grade level standardized state assessment for the District of Columbia Public Schools. The primary assessments included in the DC CAS reflect proficiency in reading and mathematics of students in grades 3-8 and 10. Additional DC CAS assessments include Science in grades 5 and 8, Biology in high school, and Composition in grades 4, 7, and 10. The DC CAS is given once a year during a two week time period, typically in April. The DC CAS includes multiple choice and constructed response questions administered in four sections under standardized conditions. DC CAS guidelines suggest time limits of 30 to 40 minutes for each section, but there are no fixed time limits (District of Columbia Office of the State Superintendent of Education, 2011). Scores on the DC CAS reflect students' progress on the knowledge and skills of the DC content standards. Each student will earn a raw score between zero and 54 in reading and between zero and 60. Raw scores are placed into four levels: advanced, proficient, basic, and below basic to determine proficiency in reading and mathematics. Students scoring advanced or proficient on the DC CAS meet grade-level expectations, while students scoring basic or below basic fail to meet grade-level expectations. Proficiency levels on the DC CAS determine a school's ability to meet adequate yearly progress (AYP) mandates by the federal government under ESEA (District of Columbia Office of the State Superintendent of Education, 2011).

Across DC CAS assessments, by grade and content area, the reliabilities for the assessment are, on average 0.92 for the stratified alpha. The average stratified alpha for DC CAS reading was 0.93 and 0.93 for mathematics (District of Columbia Office of the State

Superintendent of Education, 2011). Typically, reliability coefficients that are equal or greater to 0.8 are considered acceptable.

This study measured academic achievement using only the reading and mathematics portions of the DC CAS. Raw DC CAS reading and mathematics scores were converted into scaled T-scores to allow for comparison across grade levels and years of implementation. SAM has only been implemented in elementary and elementary/middle buildings. Therefore, only the DC CAS assessments for grades 3-8 were analyzed.

SAM Analysis of Selected Critical Features (SAMAN). Choosing to adopt SAM is only the first step in the implementation process. To create a successful and sustainable program, administrators and school leaders must focus on *how* they implement SAM. The SAMAN evaluates SAM implementation to determine a school's level of fidelity of implementation (treatment integrity) (Sailor & Roger, 2008). The six guiding principles of SAM (discussed in Chapter 2) are broken down into 15 critical features, on which each of the SAMAN assessment items are based (Sailor & Roger, 2005; Sailor & Roger, 2008; Sailor, et al., 2006). Measuring treatment integrity was important to understanding how successfully a school implements each of the critical features of SAM. The Ravenswood City School District (RCSD), as discussed in Chapter 2, experienced increases in academic achievement as their fidelity of SAM implementation increased. Therefore, it is hypothesized that the higher a school scores on the SAMAN, the larger the increase in academic achievement. In order for this study to analyze the effect of SAM on academic achievement, the level of fidelity of SAM in each school was measured.

The creators of SAM require the administration of the SAMAN twice a year, once in the fall semester and once in the spring semester, by trained, reliable data collectors. Administration of the SAMAN occurs for a minimum of two years, until all critical features are met to the SAM standards of enculturation and sustainability. Qualified SAMAN assessors conduct interviews, make observations, attend team meetings, and review relevant school paperwork to determine a school's score on each of the 15 critical features. "Each of the 15 critical features is evaluated using a Likert scale from 0 to 3, where 0 reflects essentially no manifestation of the feature at the school and 3 represents full implementation" (Sailor, et al., 2006, p. 22). The SAMAN manual provides a detailed scoring rubric which is made available to participating schools. Scores of 0 to 3 on each of the 15 critical features are averaged to produce a total scale score. Schools scoring below 1.5 on the SAMAN total scale score fall in the *initiation* phase and generally reflect schools beginning to understand the SAM school reform process and how it aligns with its unique characteristics. SAMAN total scale scores between 1.5 and 2.5 reflect schools in the *implementation* phase of SAM, signifying the acceptance of new cultural ideas and progress toward refining SAM processes through action planning. Schools scoring 2.5 to 3.0 reflect the *enculturation* phase, representing the full installation of SAM and its guiding principles in the daily operations of the school. SAMAN scores are tracked over a minimum of three years to monitor each school's progress toward full implementation (Sailor, 2009). Based on previous research with SAM implementation in the RCSD, SAM is expected to reach enculturation, with appropriate district support, in three or four years of assisted installation.

The administration of the SAMAN in DCPS SAM schools occurred in the spring of 2008, the semester before SAM implementation, to establish baseline. As directed, DCPS SAM schools were assessed on the SAMAN twice a year during implementation (2008-2009 through

2010-2011). SAMAN scores were used to compare the academic achievement of students attending DCPS-SAM schools that reached the enculturation phase (2.5 or higher on the SAMAN), DCPS students attending SAM schools not reaching the enculturation phase, and students attending DCPS comparison schools, over three years of implementation. The fidelity scores obtained at the end of year three of implementation (spring of 2011) were used to determine the SAM schools' level of enculturation. SAMAN assessments were not obtained in comparison schools.

Data Analysis

This study used between-subjects analysis of co-variance (ANCOVA) and repeated measures analysis of variance (ANOVA) to examine academic achievement scores of students attending DCPS schools over three years of implementation. Using the repeated measures designs in conjunction with between-subjects designs helps the researchers to understand the school-wide and individual effects of SAM on academic achievement.

Research Question 1: Effect of SAM on Academic Achievement by Year. Analysis of covariance (ANCOVA) was used to test whether there are significant differences in the academic achievement of students attending SAM schools versus students attending comparison schools for each year of this study, given their baseline scores. Green and Salkind (2008) characterize one-way ANCOVA as a statistical analysis for testing group differences on a dependent variable after adjusting for group differences on a control variable. SAM is a school reform model based on the theory that improvements made school-wide will raise the academic achievement of all students. ANCOVA was chosen to answer research question one because it allows the researcher to observe school-wide differences in DC CAS scores between SAM and

comparison schools for each year of implementation (2008-2009, 2009-2010 and 2010-2011), while controlling for differences at baseline (2007-2008).

Research Question 2: Effect of SAM on Academic Achievement Across Time. To understand the effect of SAM across three years of implementation, a repeated measures analysis of variance (ANOVA) was conducted. According to Keppel and Wickens (2004), repeated measures ANOVA designs are “based on key differences among the scores of the individual subjects” and “emphasize the multiple measures taken from each subject” (p. 347). The present study used repeated measures ANOVA with one within-subjects factor and one between-subjects factor to examine the effects over time of differences in installation method (SAM vs. comparison) on academic achievement. Repeated measures ANOVA was chosen to analyze research question two because it allows the researcher to analyze the effect of SAM on the academic achievement of individuals who had the maximum exposure to SAM. Only students with scores obtained at baseline and during all three years of implementation were included in this analysis.

Research Question 3: Effect of Fidelity of SAM Implementation in Year 3. ANCOVA was used to test whether there were significant differences in the academic achievement of students attending DCPS SAM schools that reached the enculturation phase, students attending DCPS SAM schools that did not reach the enculturation phase, and students attending DCPS comparison schools, given their baseline scores. ANCOVA was chosen to answer research question three because it allows the researcher to observe school-wide differences in DC CAS scores between SAM schools that reached the enculturation phase, students attending DCPS SAM schools that did not reach the enculturation phase, and students

attending DCPS comparison schools for each year of implementation (2008-2009, 2009-2010 and 2010-2011), while controlling for differences at baseline (2007-2008).

Research Question 4: Effect of SAM on Students in Special Education Across Time.

Repeated measures ANOVA with one within-subjects factor and one between-subjects factor was used to examine the effects over time of installation method (SAM vs. comparison) on academic achievement of students in special education. Repeated measures ANOVA was chosen for this analysis because it allows the researcher to understand individual effects of SAM on students in special education across three years of implementation. Looking specifically at students in special education is important to understanding the effect of SAM on academic achievement because students in special education experience the greatest change to their educational experience during SAM implementation. Instead of the traditional pull-out model, SAM fully integrates students with disabilities into general education. Repeated measures ANOVAs for research question four analyzed whether or not SAM had a different effect on the academic achievement of students in special education than other students.

Summary

The purpose of the study is to understand the effect of SAM on the academic achievement of students. Data for the current study was collected in the District of Columbia Public Schools from the 2007-2008 school year through the 2010-2011 school year. SAM implementation occurred from 2008-2009 to 2010-2011. Data collected during the 2007-2008 school year was used as baseline. Scores from the reading and mathematics sections of the DC CAS were used to measure academic achievement in these analyses. SAMAN scores were used to determine each school's level of fidelity of SAM implementation. Several statistical tests

were used to answer research questions. Between-subjects ANCOVA were conducted to analyze differences in method installation (SAM vs. comparison) on academic achievement for each year of SAM implementation. Repeated measures ANOVA with one within-subjects factor and one between-subjects factor was conducted to examine the effects over time of teaching method (SAM vs. comparison) on academic achievement. A one-way ANCOVA was conducted on year three scores to test whether there are significant differences in the academic achievement of students attending SAM schools that reached the enculturation phase versus students attending SAM schools that did not reach the enculturation phase and students attending comparison schools. Repeated measures ANOVA with one within-subjects factor and one between-subjects factor was conducted to examine the effects over time of installation method (SAM vs. comparison) on the academic achievement of students in special education.

Chapter 4: Results

Overview

The purpose of this study was to investigate the impact of the School-wide Applications Model (SAM) on the academic achievement of students attending seven schools in the District of Columbia Public Schools (DCPS). This chapter reports the findings from the statistical procedures used to answer the research questions.

Research Question 1: Effect of SAM on Academic Achievement by Year

Between-subjects analyses of covariance (ANCOVA) were conducted to analyze differences in method installation (SAM vs. comparison) on academic achievement for each year of SAM implementation. Students' 2007-2008 academic achievement scores were used as covariates to adjust for baseline differences between SAM and comparison schools.

Baseline Year 2007-2008. To evaluate the comparability of students in SAM and comparison schools prior to the implementation of SAM, a between-subjects analysis of variance (ANOVA) was conducted comparing the academic achievement of students attending SAM to the scores of students attending comparison schools prior to the implementation of SAM. Results indicate significantly different scores in DC CAS reading, $F(1,2102) = 78.903$, $p < .001$, and mathematics, $F(1,2102) = 47.045$, $p < .001$, between students attending SAM versus comparison schools. Students attending schools slated for the SAM intervention scored significantly higher on DC CAS reading and mathematics assessments than students attending comparison schools prior to implementation of SAM. Baseline scores in reading and mathematics were used as covariates in ANCOVA analyses to increase statistical power.

Year One 2008-2009. A one-way ANCOVA was conducted to compare the academic achievement of students attending SAM schools to the scores of students attending comparison schools in year one of SAM implementation. There were no significant differences on DC CAS reading scores between the two groups of students after adjusting for baseline differences, $F(1, 1125) = 2.34, p = .13, \eta^2 = .002$. However, students attending comparison schools had significantly higher mathematics scores, after adjusting for baseline differences, than students attending SAM schools, $F(1, 1124) = 6.92, p = .009, \eta^2 = .006$. Table 4.1 displays means and standard deviations of DC CAS reading and mathematics scores for year one of implementation.

Table 4.1

Means and Standard Deviations of DC CAS Scores by Subject for Year1 of Implementation (2008-2009)

	Reading					Math				
	n (students)	n (schools)	M	SD	Adjusted M*	n (students)	n (schools)	M	SD	Adjusted M**
SAM	591	7	56.12	13.74	54.20	590	7	57.03	16.04	55.10
Comp.	537	7	51.05	14.32	53.16	537	7	54.99	17.44	57.11

Note. DC CAS = District of Columbia Comprehensive Assessment System

* covariates for 08-09 reading evaluated at a 51.53 value

** covariates for 08-09 mathematics evaluated at a 53.36 value

Year Two 2009-2010. A one-way ANCOVA was used to test group differences between students in SAM schools and students in comparison schools in year two of SAM implementation. As in year one, there were no significant differences in DC CAS reading scores after adjusting for baseline differences, $F(1, 600) = 1.80, p = .18, \eta^2 = .003$, and students attending comparison schools scored significantly higher on the mathematics assessment, after adjustment, than students attending SAM schools, $F(1, 600) = 6.97, p = .009, \eta^2 = .011$. Table 4.2 displays the means and standard deviations for DC CAS reading and mathematics scores for year two of implementation.

Table 4.2

Means and Standard Deviations of DC CAS Scores by Subject for Year 2 of Implementation (2009-2010)

	Reading					Math				
	n (students)	n (schools)	M	SD	Adjusted M*	n (students)	n (schools)	M	SD	Adjusted M**
SAM	301	7	54.24	13.20	52.32	301	7	54.04	14.69	51.90
Comp.	302	7	51.65	14.13	53.56	302	7	52.45	17.16	54.58

Note. DC CAS = District of Columbia Comprehensive Assessment System

* covariates for 09-10 reading evaluated at a 51.03 value

** covariates for 09-10 mathematics evaluated at a 52.55 value

Year Three 2010-2011. A one-way ANCOVA was also used to test group differences in the third year of SAM implementation. This analysis found that students in comparison schools scored significantly higher than students in SAM in both DC CAS reading, $F(1, 233) = 4.79$, $p = .03$, $\eta^2 = .020$, and mathematics, $F(1, 233) = 6.02$, $p = .015$, $\eta^2 = .025$, after adjusting for baseline differences. Table 4.3 displays the means and standard deviations for DC CAS reading and mathematics scores for year three of implementation.

Table 4.3

Means and Standard Deviations of DC CAS Scores by Subject for Year 3 of Implementation (2010-2011)

	Reading					Math				
	n (students)	n (schools)	M	SD	Adjusted M*	n (students)	n (schools)	M	SD	Adjusted M**
SAM	115	5	51.38	11.59	48.60	115	5	49.27	11.71	45.33
Comp.	121	6	49.12	13.22	51.77	121	6	45.44	14.71	49.18

Note. DC CAS = District of Columbia Comprehensive Assessment System

* covariates for 10-11 reading evaluated at a 49.47 value

** covariates for 10-11 mathematics evaluated at a 51.46 value

Research Question 2: Effect of SAM on Academic Achievement Across Time

DC CAS Reading. Repeated measures ANOVA with one within-subjects factor and one between-subjects factor was conducted to examine the effects over time of teaching method (SAM vs. comparison) on academic achievement. In order to test changes in academic achievement over time, only students with obtained scores during the baseline year (2007-2008)

and all three years of SAM implementation (2008-2009 through 2010-2011) were included in this analysis. There was a significant change in reading scores from baseline through the third year of SAM implementation overall, Wilk's $\lambda = .96$, $F(3,222) = 3.3$, $p = .02$, $\eta^2 = .042$. The interaction of the within and between subjects factors was also significant, Wilk's $\lambda = .83$, $F(3,222) = 14.62$, $p < .001$, $\eta^2 = .16$, indicating that the SAM students and comparison students changed differently over time. Table 4.4 displays descriptive statistics of DC CAS reading scores from 2007-2008 to 2010-2011. Inspection of the means reveal the comparison schools improved over time while the SAM schools decreased (see Figure 4.1). Table 4.5 displays the source table of the repeated measures ANOVA for DC CAS reading scores.

Table 4.4

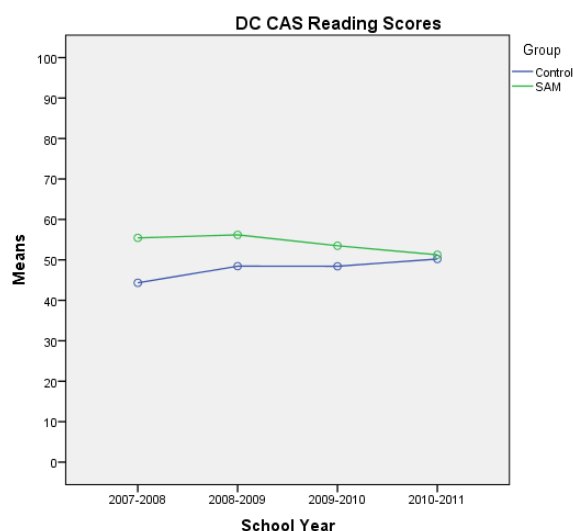
Descriptive Statistics of DC CAS Reading Scores from 2007-2008 to 2010-2011 School Years

Group	School Year	Mean	Std. Dev.	n (students)	n (schools)
SAM	2007-2008	55.43	12.41	112	5
	2008-2009	56.19	13.22	112	5
	2009-2010	53.49	12.24	112	5
	2010-2011	51.26	11.68	112	5
Comparison	2007-2008	44.32	17.17	114	6
	2008-2009	48.44	15.13	114	6
	2009-2010	48.42	14.77	114	6
	2010-2011	50.22	12.11	114	6

Table 4.5

Repeated Measures ANOVA of DC CAS Reading Scores (2007-2008 to 2010-2011)

Source	Wilk's λ	F	df	Error df	p	η^2
Within Ss (time)	.96	3.28	3	222	.022	.04
Interaction (time*group)	.83	14.62	3	222	< .001	.16

Figure 4.1*Reading Scores of SAM & Comparison Schools from 2007-2008 to 2010-2011 School Years*

DC CAS Mathematics. A repeated measures ANOVA with time as the within-subjects factor and teaching condition (SAM vs. comparison) as the between-subjects factor was conducted to test group differences in mathematics score changes over time. There was a significant change in mathematics scores overall, Wilk's $\lambda = .69$, $F(3,222) = 33.08$, $p < .001$, $\eta^2 = .309$. The group by time interaction was also significant, Wilk's $\lambda = .82$, $F(3,222) = 16.13$, $p < .001$, $\eta^2 = .18$. Inspection of the means reveal that students attending comparison schools improved from 2007-2008 to 2008-2009, but experienced declines from 2008-2009 to 2009-2010 and from 2009-2010 to 2010-2011. The mathematics scores of students attending SAM schools decreased each year (see Figure 4.2). Table 4.6 displays descriptive statistics of DC CAS mathematics scores from 2007-2008 to 2010-2011. Table 4.7 displays the source table of the repeated measures ANOVA results for DC CAS mathematics scores.

Table 4.6

Descriptive Statistics of DC CAS Mathematics Scores of Students from 2007-2008 to 2010-2011 School Years

Group	School Year	Mean	SD	n (students)	n (schools)
SAM	2007-2008	59.62	15.56	112	5
	2008-2009	58.92	13.51	112	5
	2009-2010	53.26	13.19	112	5
	2010-2011	49.04	11.59	112	5
Comparison	2007-2008	44.46	16.87	114	6
	2008-2009	50.56	15.76	114	6
	2009-2010	48.29	15.04	114	6
	2010-2011	46.24	13.60	114	6

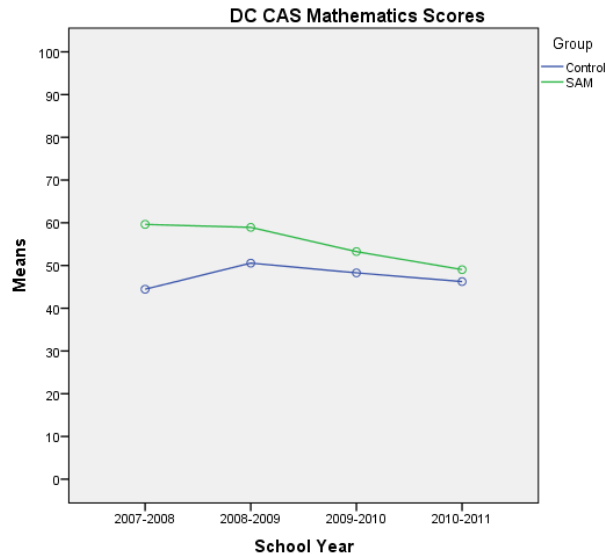
Table 4.7

Repeated Measures ANOVA of DC CAS Mathematics Scores

Source	Wilk's λ	F	df	Error df	p	η^2
Within Ss (time)	.69	33.08	3	222	< .001	.31
Interaction (time*group)	.82	16.13	3	222	< .001	.18

Figure 4.2

Mathematics Scores of SAM & Comparison Schools from 2007-2008 to 2010-2011 School Years



Research Question 3: Effect of Fidelity of SAM Implementation in Year 3

A one-way ANCOVA was conducted on year three scores to test whether there are significant differences in the academic achievement of students in SAM schools that reached the

enculturation phase, those attending SAM schools that did not reach the enculturation phase and students attending comparison schools, controlling for baseline academic achievement. There were no significant differences in DC CAS reading scores between students attending SAM schools that reached enculturation, students attending SAM schools that did not reach enculturation, and students attending comparison schools, after adjusting for baseline differences, $F(2, 232) = 2.40$, $p = .092$, $\eta^2 = .020$. However, there were significant differences in the mathematics scores between the three groups, $F(2,232) = 3.58$, $p = .029$, $\eta^2 = .030$. Planned comparisons testing pairwise differences between the enculturation group and the other two groups were conducted. SAM schools that reached enculturation were not significantly different from SAM schools not reaching enculturation, $p = .29$, but SAM schools that reached enculturation had significantly lower scores than comparison schools, $p = .01$. Table 4.8 displays the means and standard deviations for DC CAS reading and mathematics scores for students attending SAM schools that reached enculturation, students attending SAM schools that did not reach enculturation, and students attending comparison schools.

Table 4.8
Means and Standard Deviations of DC CAS Scores by Subject for Year 3 of Implementation (2010-2011)

	Reading					Math				
	n (students)	n (schools)	M	SD	Adjusted M*	n (students)	n (schools)	M	SD	Adjusted M**
Encul.	49	2	51.16	14.00	48.36	49	2	48.76	10.90	44.07
Non- Encul.	66	3	51.55	9.54	48.77	66	3	49.65	12.35	46.23
Comp.	121	6	49.12	13.22	51.77	121	6	45.44	14.71	49.20

Note. DC CAS = District of Columbia Comprehensive Assessment System

* covariates for 10-11 reading evaluated at a 49.47 value

** covariates for 10-11 mathematics evaluated at a 51.46 value

Research Question 4: Effect of SAM on Students in Special Education Over Time

DC CAS Reading. Repeated measures ANOVA with one within-subjects factor and one between-subjects factor was conducted to examine the effects over time of teaching method (SAM vs. comparison) on the reading scores of students in special education. In order to test changes over time, only students in special education with obtained scores during the baseline year (2007-2008) and all three years of SAM implementation (2008-2009 through 2010-2011) were included in this analysis. There was no change over time in reading scores of students in special education overall, Wilk's $\lambda = .87$, $F(3,37) = 1.89$, $p = .15$, $\eta^2 = .13$, nor was there a significant interaction of group by time, Wilk's $\lambda = .94$, $F(3,37) = .84$, $p = .48$, $\eta^2 = .06$. Table 4.9 displays descriptive statistics of DC CAS reading scores from 2007-2008 to 2010-2011. Figure 4.3 displays the reading scores of students in special education attending SAM schools and students in special education attending comparison schools from 2007-2008 to 2010-2011. Table 4.10 displays the repeated measures ANOVA results for DC CAS reading scores for students in special education.

Table 4.9

Descriptive Statistics of DC CAS Reading Scores of Students in Special Education from 2007-2008 to 2010-2011 School Years

Group	School Year	Mean	SD	n (students)	n (schools)
SAM	2007-2008	45.11	10.32	19	4
	2008-2009	39.21	14.51	19	4
	2009-2010	37.79	13.29	19	4
	2010-2011	40.58	13.71	19	4
Comparison	2007-2008	32.64	16.54	22	3
	2008-2009	29.23	18.95	22	3
	2009-2010	30.45	16.76	22	3
	2010-2011	34.91	13.33	22	3

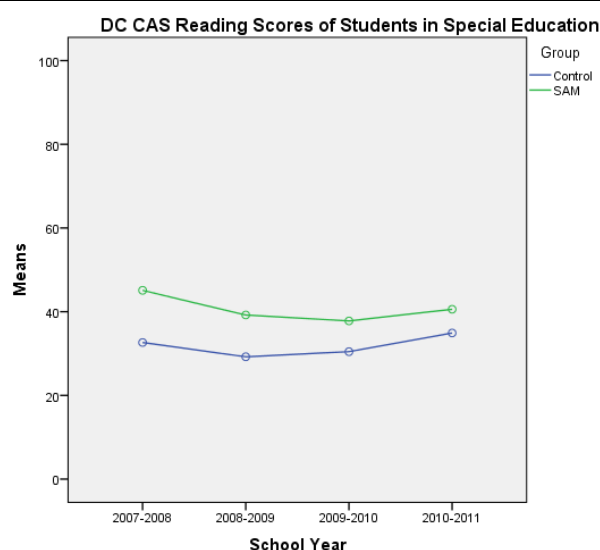
Table 4.10

Repeated Measures ANOVA of DC CAS Reading Scores of Students in Special Education (2007-2008 to 2010-2011)

Effect	Wilk's λ	F	df	Error df	p	η^2
Within Ss (time)	.87	1.89	3	37	.15	.13
Interaction (time*group)	.94	.84	3	37	.48	.06

Figure 4.3

Reading Scores of Students in Special Education Attending SAM & Comparison Schools from 2007-2008 to 2010-2011 School Years



DC CAS Mathematics. A repeated measures ANOVA with time as the within-subjects factor and teaching condition (SAM vs. comparison) as the between-subjects factor was conducted to analyze differences between mathematics scores of students in special education. There was no significant change over time in mathematics achievement of students in special education, Wilk's $\lambda = .93$, $F(3,37) = .93$, $p = .43$, $\eta^2 = .07$. In addition, there were no significant differences between groups in change over time, Wilk's $\lambda = .95$, $F(3,37) = .59$, $p = .63$, $\eta^2 = .05$. Table 4.11 displays descriptive statistics of DC CAS mathematics scores from 2007-2008 to 2010-2011. Figure 4.4 shows mathematics scores of students in special education attending

SAM and comparison schools over time. Table 4.12 displays the repeated measures ANOVA results for DC CAS mathematics scores.

Table 4.11

Descriptive Statistics of DC CAS Mathematics Scores of Students in Special Education from 2007-2008 to 2010-2011 School Years

Group	School Year	Mean	SD	n (students)	n (schools)
SAM	2007-2008	44.42	14.20	19	4
	2008-2009	44.79	8.77	19	4
	2009-2010	41.32	10.21	19	4
	2010-2011	39.84	8.17	19	4
Comparison	2007-2008	33.82	13.94	22	3
	2008-2009	33.14	14.99	22	3
	2009-2010	34.36	14.42	22	3
	2010-2011	32.27	16.17	22	3

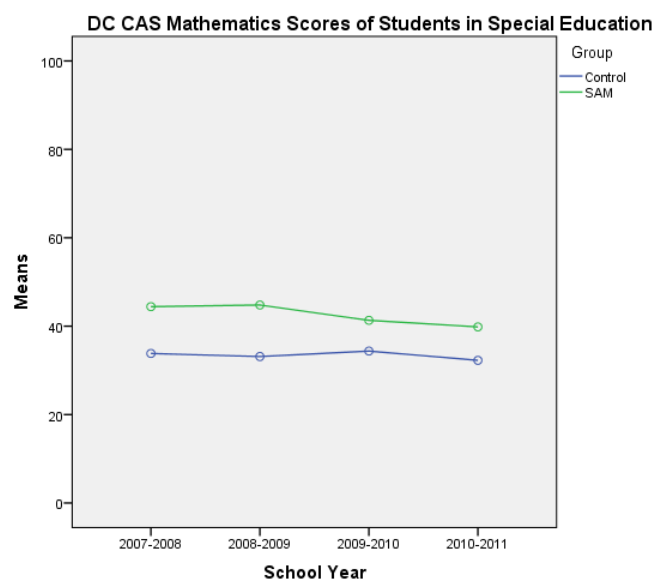
Table 4.12

Results of Repeated Measures ANOVA of DC CAS Mathematics Scores of Students in Special Education (2007-2008 to 2010-2011)

Effect	Wilk's λ	F	df	Error df	p	η^2
Within Ss (time)	.93	.93	3	37	.43	.07
Interaction (time*group)	.95	.59	3	37	.63	.05

Figure 4.4

Mathematics Scores of Students in Special Education Attending SAM & Comparison Schools from 2007-2008 to 2010-2011 School Years



Chapter 5: Discussion

The purpose of this study was to understand the effect of three years of SAM implementation on academic achievement of students in DCPS. Results indicated mostly insignificant findings or significant findings in unexpected directions. Three study considerations related to fidelity of reform implementation, transitions in DCPS, and the sole use of standardized state assessment data to measure student achievement are discussed. Broader implications of study results on policy, research, and practice are explored. Ideas for future research are also discussed.

Considerations

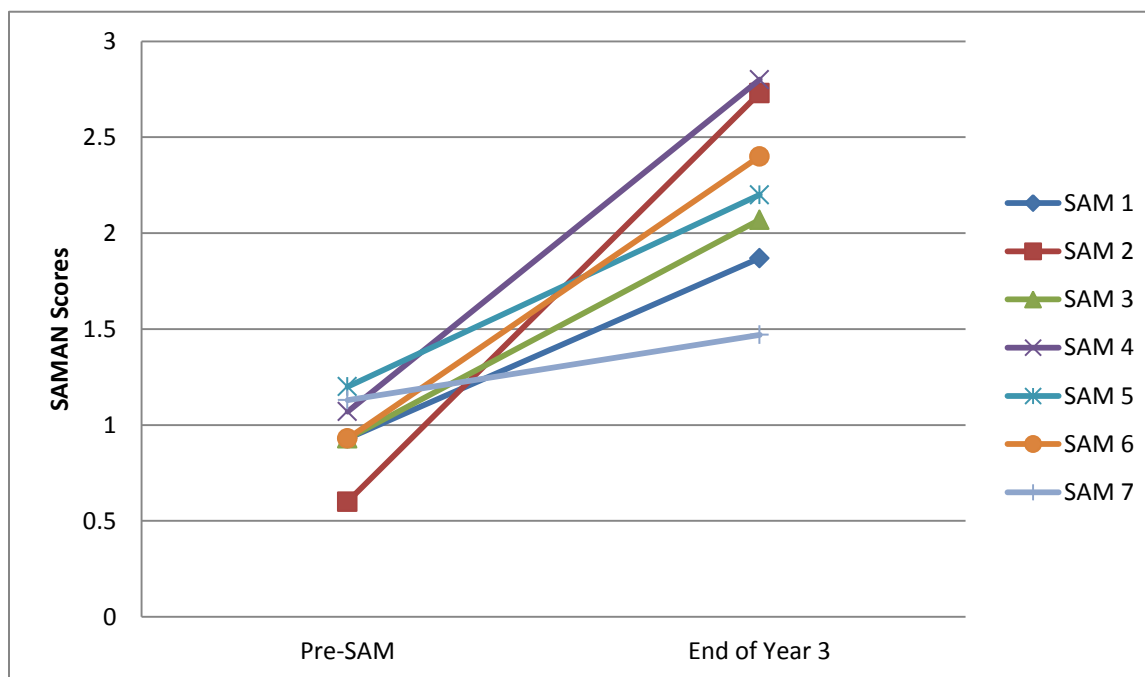
As discussed in Chapter Two, White Church Elementary and Ravenswood Public Schools experienced enormous increases in student academic achievement after beginning implementation of SAM. The academic achievement of students in Ravenswood advanced in a pattern that directly paralleled increases in fidelity to SAM. Large increases in academic achievement at White Church and Ravenswood occurring during SAM implementation inspired the development of the current study. The researcher hypothesized that SAM implementation in DCPS would result in increases in DC CAS scores in reading and mathematics. Contrary to researcher predictions, however, many results of this study showed insignificant differences in the academic achievement of students attending SAM schools and students attending comparison schools. Surprisingly significant results showing greater increases in academic achievement of students attending comparison schools were also observed. Such results caused the researcher to consider factors influencing academic achievement and SAM implementation that were unique to DCPS.

Three considerations stood out as vital to interpretation of study results. First, the fidelity of implementation of SAM in DCPS likely impacted study results. Successes and shortcomings of implementation are discussed. Second, major political and leadership transitions in DCPS taking place during the years of SAM implementation must be considered when interpreting results. Third, the use of standardized state assessment data to determine academic achievement and effectiveness of SAM influenced analysis of study results. Limiting features of the data collection methods required by the DC CAS narrowed the scope of interpretation of between-subjects and repeated measures analyses. Public questions of validity related to DC CAS data obtained during 2007-2010 also constrained the interpretation of study results.

Implementation Fidelity. Only two of the seven DCPS SAM schools included in this study reached the enculturation phase of implementation by the end of year three. Lack of enculturation of SAM in five DCPS schools made it difficult to determine SAM's overall impact on academic achievement in DCPS. However, even when the two SAM schools reaching the enculturation phase were compared to the DCPS SAM schools not reaching enculturation and comparison schools, they did not score significantly higher in reading and actually scored significantly lower than students in the comparison schools in mathematics. Study results prompted the researcher to return to the SAMAN data, hypothesizing that more specific information about implementation fidelity would provide insight into study results.

Successes in DCPS SAM Schools. Several successes related to SAM implementation were observed upon close examination of the SAMAN data. While only two schools ended year three of implementation in the enculturation phase, all seven DCPS SAM schools made gains in their overall SAMAN scores across three years of implementation. Figure 5.1 displays the trajectory of SAMAN scores across three years of SAM implementation.

Figure 5.1
SAMAN Scores of DCPS SAM Schools



As discussed in Chapter 3, fidelity of implementation was determined by taking the average score across fifteen critical features of SAM. Only the SAMAN scores obtained at the end of year three were used to determine fidelity in study analyses. SAMAN data related specifically to the fifteen critical features, collected across all three years of implementation, was not used as part of the research for this study. However, the researcher returned to SAMAN critical features data to help explain study results.

Data on the individual critical features of SAM implementation revealed information aiding in interpretation of study results. At the end of year three, these observations were made:

- 5 schools received a SAMAN score of three, the highest level of implementation, on:

- Critical Feature 12: School has a School Leadership Team empowered by the school and district.
- Critical Feature 14: School has working partnership with community businesses and service providers.
- Critical Feature 15: SAM implementation is fully recognized and supported by the district.
- 4 schools reached the enculturation phase on:
 - Critical Feature 8: Data-driven, collective, decision-making, learning organization driven by team processes.

Critical features 12 and 15 reflect support for SAM at the district level. Chapter 2 reviews data noting the importance of receiving district support prior to implementing school reform (S. E. Anderson & Togneri, 2005; Boyd, et al., 2008; Copland, 2003; Kotter, 1996; Payne, 2008; Shores & Chester, 2009b). While district support appears to have developed over the three years of implementation, it is possible that the lack of full support of SAM in year one hindered schools' ability to implement SAM more quickly. Critical features 12 and 8, both fully implemented by a majority of schools, reflect the school's ability to use collaborative teams to analyze data and make informed decisions. As noted in Chapter 3, prior research on school reform suggests that data-based decision making is vital to increasing student achievement (Desimone, 2002; Elmore, 2004; Fullan, 2008; Knight, 2009; Payne, 2008; Shores & Chester, 2009b; Spillane, et al., 2001; Togneri & Anderson, 2003). Although enculturation was not realized in all areas after three years of implementation, forming professional teams and beginning the process of analyzing data could lay the foundation for schools' development of other critical features.

Although most schools did not reach the enculturation phase overall, many schools began to fully implement some areas of SAM. Prior research suggests that schools require at least three to five years of implementation for changes to become deeply intertwined into the daily workings of the school. Bryk, et al. (2010), for example, researched the development of school reform in the Chicago Public Schools over 6 years. Researchers document the importance of “small wins” along the way. The current study only examined the effect of SAM on academic achievement after only 3 years of implementation. SAMAN results suggest that several DCPS SAM schools are experiencing many “small wins” and are on their way to full implementation, but more time is needed to enculturate SAM.

Shortcomings of DCPS SAM Schools. DCPS also fell short on some areas of SAM implementation. The fidelity of implementation in two schools remained flat during year three and three additional schools actually dropped in fidelity the same year. One of the schools experiencing a drop in fidelity had actually reached the overall enculturation phase, but lost points in the spring of year three and fell back to the implementation phase.

Data collected on critical feature 2 (considering all students general education students) provided further understanding of SAM implementation in DCPS. Four DCPS SAM schools saw a drop in their scores during year three on critical feature 2. Of those four schools, three saw considerable drops in their overall SAMAN score during the same time period. Critical feature 2 assesses schools on their staff’s perception of students receiving special education services and their role in serving such students. In essence, critical feature 2 represents how teachers categorize students (i.e. students in general or special education). Scores that are higher on critical feature 2 reflect a beginning to transition from thinking of students as ‘special education students’ to considering them general education students who require additional supports to meet

grade level expectations. An overall fall in all SAMAN scores with a simultaneous drop in critical feature 2 suggests that these four SAM schools began to revert back to ‘business as usual’ during year three of implementation. It is possible that these schools were motivated to embrace change at the start of SAM implementation, but slipped back to old education processes over time. Such results raise questions concerning the sustainability of SAM implementation in DCPS.

Scores on critical feature 13 (school has working partnership with families) at the end of year three also increased awareness of DCPS-SAM implementation and study results. Five schools had lower scores during year three on critical feature 13 than on most of the other critical features. As discussed in Chapter 2, actively involving families in decision-making making processes is very difficult (Sheldon, 2003). Most schools develop informal relationships with their students’ families, but don’t foster connections that truly involve them in educational processes. The SAMAN scores of DCPS SAM schools revealed that most schools had a difficult time interacting with their students’ families in a way that could have positively impacted academic achievement, a factor that must be considered when interpreting study results.

DCPS Transitions. As discussed in Chapter 1, many changes to political structures and policies took place in DC during the years of this study. Shifts in decision-making powers within the district had a direct impact on teacher and administrative staff. Between 2007 and 2010, the district’s chancellor, Michelle Rhee, dismissed approximately 1,000 teachers due to budget constraints, licensure deficiencies required by NCLB, and poor teaching performance (Turque, 2009c, 2010a, 2010b, 2011b). In total, approximately 3,500 teachers work for DCPS. This means that Rhee dismissed over a quarter of the teaching staff in DC while she was

Long-term increases in student achievement have been observed in some schools implementing large-scale reform, but researchers note that changes typically take several years to take hold (Bryk, et al., 2010; Payne, 2008). Rhee executed major changes in staffing during all four years associated with this study. Considering the length of time that school reforms require to increase student achievement, it is unlikely that the potential positive effects of large scale political changes and teacher turnover took hold during the years associated with this study. This must be considered when interpreting results of this study. Perhaps the turnover had an effect on teachers' ability to focus on school reform while they were feeling concerned about their own or their colleague's careers.

Researchers of school reform often cite improved instruction as a key factor in increasing academic achievement (Bryk, et al., 2010; Elmore, 2004; Payne, 2008). In their study of the Chicago Public Schools from 1990-1996, Bryk, Sebring, Allensworth, Luppescu, and Easton (2010) note "...it is inconceivable to us that major improvements in student learning can occur without fundamental changes in the way students interact with teachers around subject matter" (p. 47). Due to other reform initiatives being implemented in the DCPS, SAM implementation coaches were not permitted to provide technical assistance to teachers on evidence-based instructional strategies. DCPS SAM coaches felt this greatly reduced their ability to increase academic achievement. It is possible that instructional coaching on evidence-based instructional practices is essential to successful SAM implementation.


DC CAS Data. The use of DC CAS data as the sole measure of academic achievement proved challenging to interpreting study results. Data collection methods related to the DC CAS limited the number of students that could be included in between-subjects and repeated measures analyses, narrowing the scope for which the effect of SAM implementation on academic

achievement in DCPS could be analyzed. The validity of DC CAS data collected between 2007 and 2010 has also been called into question, directly impacting results of this study.


Data Collection. Academic achievement was solely measured using the DC CAS, the standardized state assessment for the District of Columbia. As with other standardized state assessments, DC CAS testing begins in students' third grade year. Students in grades PK through second grade do not take state assessments. Given that SAM implementation only took place in elementary schools, data for this study is limited to data obtained from students in grades 3-8. Three of the seven DCPS SAM schools serve students in grades pre-kindergarten through fifth grades (SAM schools 3, 5, and 7 – see Table 3.1), two serve students through sixth grade (SAM schools 1 and 4), and two serve students PK through eighth grade (SAM schools 2 and 6). Figure 5.2 displays the years of data obtained in DCPS SAM schools.

Figure 5.2
Years of Data Obtained in DCPS SAM Schools


Cohort of Students	Baseline Data		SAM Implementation Data		
	06-07	07-08	08-09	09-10	10-11
A			PK	K	1 st
B		PK	K	1 st	2 nd
C	PK	K	1 st	2 nd	3 rd
D	K	1 st	2 nd	3 rd	4 th
E	1 st	2 nd	3 rd	4 th	5 th
F	2 nd	3 rd	4 th	5 th	6 th
G	3 rd	4 th	5 th	6 th	7 th
H	4 th	5 th	6 th	7 th	8 th



3 SAM schools
(3, 5 & 7) =
Grades 3-5



2 SAM schools
(1 & 4) =
Grades 3-6



2 SAM schools
(2 & 6) =
Grades 3-8

DC CAS Data Obtained in DCPS SAM Schools

Between-Subjects Analyses. The nature of the data collection of the DC CAS limited the number of subjects included in the between-subjects analyses used to answer research question one. Initial ANOVA tests indicated that students attending SAM schools scored significantly higher in the reading and mathematics compared to students attending comparison schools at baseline (2007-2008). In order to account for significant differences at baseline, scores obtained in 2007-2008 were used as covariates in the between-subjects analyses for each year of SAM implementation. Therefore, only students with DC CAS scores obtained in the baseline year (2007-2008) and the implantation year of analysis were included. As the year of analysis got further away from the baseline year, more and students were excluded from between-subjects analyses. To illustrate this, one can see in Table 4.1 in Chapter 4 that 591 students attending SAM schools and 537 students attending comparison schools were included in the analysis of the data for implementation year one (2008-2009). The following year, the number of students included in the analysis drops over 40% to 301 students attending SAM schools and 302 students attending comparison schools (Table 4.2). The analysis for the third year of implementation (2010-2011) revealed further drops in the student samples (Table 4.3). Only 115 students attending SAM schools and 121 students in comparison schools were included in the analysis, equaling approximately 20% of the sample of students included in the analysis for 2008-2009 school year.

The number of students included in the between-subjects analysis used to answer research question three was also impacted by the nature of the data collection. Only 49 students attending SAM schools that reached enculturation, 66 students attending SAM schools that did not reach enculturation, and 121 students attending comparison schools were included in the analysis. This represents less than 5% of the total students included in the dataset, limiting the

researcher's ability to understand the effect of SAM implementation on academic achievement in DCPS.

Repeated Measures Analyses. The data collection structure of the DC CAS restricted the repeated measures analyses used to answer research questions two and four. Initial ANOVA tests indicated significant differences in the academic achievement scores of students attending SAM schools and students attending comparison schools at baseline (2007-2008). In order to account for significant differences at baseline, scores obtained in 2007-2008 were used as covariates in all repeated measures analyses. Only students with DC CAS scores obtained in the baseline year and three SAM intervention years were included in analyses, therefore excluding students from repeated measures analyses. For similar reasons, repeated measures analyses conducted to answer research question 2 included only 112 students attending SAM schools and 114 students attending comparison schools, representing less than five percent of the total dataset. Limitations of the data collection methods also limited the number of students included in the repeated measures analysis used to answer research question four. Only 19 students in special education attending SAM schools and 22 students in special education attending comparison schools were included in this analysis. Data collection methods limited the researcher's ability to understand the effects of SAM on academic achievement in DCPS across time.

Validity. The Washington Post and USA Today have extensively covered allegations that DCPS schools cheated on standardized state assessments (N. Anderson, 2011; Brown, 2012; Gillum & Bello, 2011; Mathews, 2011; Turque, 2009a, 2009b, 2011a, 2011c, 2012a, 2012b). Four DCPS SAM schools and three comparison schools included in this study were flagged by DC CAS publisher, McGraw-Hill, for unusually high wrong-to-right erasure rates on

assessments given between 2007 and 2010. Of the four SAM schools under investigation, one (SAM School 6) had some 2010 DC CAS scores invalidated due to evidence or strong suspicion of cheating (N. Anderson, 2011) and another (SAM School 2) is still under review for allegations that a staff member cheated by repeatedly pointing to student answer sheets (Brown, 2012). Both SAM Schools 2 and 6, the two schools at the center of the DCPS cheating investigation, serve students through eighth grade. As noted earlier in the chapter, schools serving students through eighth grade have an increased representation of student scores in both the between-subjects and repeated measures analyses. Since those same schools were involved in the suspicious testing activity, we must consider the possibility that the data from these schools cannot tell a clear story about SAM.

Scores on the DC CAS assessment trended up during the years of alleged cheating in the SAM school 6. While only 10% of students scored proficient or better in mathematics in 2006, 58% scored at that level by 2008 (Gillum & Bello, 2011; Turque, 2009b). Reading scores followed a similar pattern, jumping from 24% proficient or better in 2006 to 84% three years later in 2009 (Gillum & Bello, 2011). Former D.C. Mayor Fenty and former DCPS Chancellor Rhee attributed drastic gains to genuine academic progress. Increases in student achievement were so impressive, the U.S. Department of Education named SAM School 6 as one of 264 National Blue Ribbon Schools in 2009 (Gillum & Bello, 2011). Once allegations of cheating surfaced, many questioned whether dramatic increases in student achievement, as measured by the DC CAS, were associated with student skill acquisition or teacher manipulation of test scores.

As a precautionary measure, DCPS increased security surrounding DC CAS administration in 2011. Reports show increases in security resulted in decreases in suspicious

erasures, as well as flat and declining test scores (Turque, 2012b). DC CAS scores at SAM School 6 dropped dramatically during this time. “The pass rate in reading dropped more than 25 percentage points, to 32 percent, and the pass rate in math dropped more than 20 points, to 28 percent” (N. Anderson, 2011, p. B.1) Dramatic increases and decreases in DC CAS scores tied to cheating at SAM School 6 greatly limit interpretation study results.

Implications

Policy Implications. NCLB mandated annual standardized state assessments to increase school accountability and expose achievement gaps. As discussed in Chapter Two, current standardized state assessment structures come with high stakes. Schools failing to meet federal AYP targets face harsh sanctions such as replacement of school staff and state takeover. Teachers and administrators across the nation feel enormous pressure from superintendents, school boards, community members, and state departments of education to meet AYP targets and avoid sanctions. Pressures, however, have seemed more to motivate teachers and administrators to find ways to escape penalty than strive to improve instructional practices and raise student achievement (Payne, 2008). Urban schools across the U.S., including schools in Atlanta, Baltimore, and Philadelphia, in addition to Washington D.C., have faced suspicions and allegations of cheating and gaming to inflate state standardized test scores (Turque, 2011a). Rothstein, Jacobsen, and Wilder (2008) report that “cheating is likely to increase when teachers and administrators are faced with strong sanctions (such as loss of job) for students’ poor test performance” (p. 68). Current policy bases school accountability primarily on standardized state assessment data and imposes harsh sanctions to schools, administrators, and teachers who fail to reach expectations. Study results suggest that policy changes are necessary to transfer schools’ attention away from eluding punishment to improving instruction.

Policy changes proposed by the Obama administration in the 2010 *Blueprint for Reform* support a shift away from focusing exclusively on standardized tests utilizing universal proficiency standards in the direction of developing assessments that track student growth and school progress. The *Blueprint* promises to give schools and districts flexibility in choosing data sources and in creating school improvement plans. However, the *Blueprint* also outlines plans, similar to NCLB, for punitively intervening (replacing school staff and closing schools) in the country's the lowest performing schools (U.S. Department of Education, 2010). Study results suggest changes proposed in the *Blueprint* won't change policy enough shift teachers' focus away from cheating and gaming to avoid punishment in favor of improving instruction to raise student achievement. According to Elmore (2004) "accountability systems are often constructed by policymakers and administrators out of normative theories of how schools ought to act, uncorrupted by understanding of why they act the way they do" (p. 199). Schools typically lack strong *internal* accountability systems, preventing successful navigation of expectations of *external* accountability systems, such as standardized state assessments. As an alternative, Elmore (2004) proposes that schools invest in innovative professional development practices to promote fundamental change in practice. Based on Elmore's theory, policy, and the funding behind policy, should empower districts, schools, administrators, and teachers to improve practices through professional development – centered on evidence-based practices – to have a better chance at invoking change.

Research Implications. Results suggest that fidelity of implementation is a key factor in analyzing school reform. Prior to assessing school reform, researchers must outline key features of reform and create a measure of fidelity of implementation to assess educators' execution of them. Without a measure of fidelity, researchers cannot determine whether or not changes in

academic achievement can be attributed to school reform. Results also suggest that schools need time to enculturate school reform and observe an increase in academic achievement.

Researchers must be cognizant of schools' level of implementation before determining the success of reform. Analysis of SAMAN data suggests that schools might also begin to revert back to educational processes in place prior to reform. Researchers must consider that sustainability is not guaranteed and must find ways to monitor both school's progress and maintenance of reform.

Results related to the DC CAS also have research implications. Mandated standardized assessments were adopted nationally as a way to compare student achievement across classrooms, schools, districts, and states. However, cheating and gaming of accountability systems leave the validity of scores on standardized state assessments in question and obscure our ability to analyze the impact of instruction on student achievement and, more broadly, the effectiveness of school reform. Researchers of school reform might benefit from considering the implications of the results of this study. Serious consideration must be given to the sole use of standardized state assessments to measure student achievement as the barometer for school reform. Results of this study suggest the use of contextually relevant assessments in conjunction with, or instead of, standardized state assessments might provide greater insight into successes and shortcomings of reform.

Practice Implications

As discussed in Chapter 2, teachers are one of the keys to successful school reform. Large teacher turnover rates in DCPS could have impacted study results. Schools and districts must consider the cost-benefit of releasing a large number of staff members in the hopes of

increasing student achievement. Results of this study support prior research noting that school reform may take up to five years to have a positive impact on student achievement.

Study results also indicate that meaningful connections with parents and families might be a key feature to school reform. Schools must consider this when seeking to increase student academic achievement. Prior research suggests that schools must go further than fostering casual relationships with families. Schools finding ways to involve parents and families into the daily decision-making processes of the school have been shown to have the greatest success. Few observed increases in academic achievement and low scores on SAMAN critical feature 13 support prior research. Future implementations of SAM might consider this factor as particularly vital to the success of reform.

Questions concerning the validity of standardized state testing data also have implications for school practice. It is easy to use universal standardized testing data to determine student achievement and effectiveness of school reform. However, upon close examination, educators within schools do not always report inconsistencies between student scores on standardized tests and skill acquisition. Teachers working in SAM School 6, the school at the center of the cheating investigation, reported to USA Today in March of 2011 that they observed a “disconnect” between high standardized assessment scores and student performance in class. The article stated that one teacher noted that “it was hard to trust the scores of some students entering her class. Their scores showed they were doing well when ... they were still struggling with reading” (Gillum & Bello, 2011, p. A.1). Results from this study reinforce the importance of educational professionals using authentic and other within-class assessments to measure student achievement to guide instructional practices.

Future Research

Study results and considerations suggest that additional research on the impact of SAM implementation on the academic achievement of students in DCPS is needed. Slowly increasing SAMAN scores over three years of implementation suggest that the schools are beginning to enculturate the values of SAM, but may need more time for SAM to develop. The current study assessed the impacts of SAM after only three years of implementation. Additional research will need to be completed after DC CAS scores are obtained in future school years to assess further impacts of SAM on academic achievement.

Time is also needed to further assess the impacts of political and leadership changes in DCPS. New leadership must also become familiar with and subscribe to the principles of school reform reflected in SAM. The chaos associated with firing large numbers of teachers likely negatively impacted the academic achievement of students in DCPS. When teachers feel unsettled about their positions, and have not had time to become a fully functioning team, instruction can reflect familiar patterns rather than new and innovative ones. Only time will indicate whether or not large scale changes will have a positive impact on student achievement.

Shortcomings of implementation across DCPS SAM schools suggest that researchers measuring impacts of reform must go further to understand the most important areas of reform. Future research is needed to deeply analyze each critical feature of SAM implementation to determine which areas have the largest impact on increases and/or decreases in student achievement. This study provided only preliminary data in this regard to suggest it will be important to consider in the future. Study results also suggest that research is needed to determine if certain critical features of SAM are essential prior to implementation to lay a strong foundation for the development of other critical features. Such research could also provide

insight into critical features that are not vital to increasing academic achievement and, thus, do not need to be emphasized during implementation. Identifying the most critical features to increasing academic achievement would streamline implementation, increase schools' focus on the most important aspects of implementation, and escalate schools' likelihood of success.

Results from this study showed students attending comparison schools making significant gains in academic achievement when compared to students attending SAM schools in most analyses. However, results analyses of research question four indicate that students in special education attending SAM schools did not score significantly different from students in special education attending comparison schools. Results show that students in special education responded differently to SAM implementation than other students. As discussed in Chapter 2, SAM fully integrates students with disabilities into general education. It is possible that SAM made a greater impact on the academic achievement of students in special education than other students because they experience a more dramatic change in their educational program. Future research comparing students in special education to students not in special education within the same SAM school is needed to help understand the effect of SAM implementation on students with disabilities.

Data limitations and cheating on state standardized assessments require questioning of the validity of using such scores as the sole determinant of student achievement and, ultimately, the effectiveness of school reform. Therefore, alternative assessment methods must be considered in future research. Researchers have proposed the use of growth percentiles (Betebenner, 2009), value-added analyses (Heck, 2000 ; W. L. Sanders & Horn, 1994), and curriculum-based measures (Deno, 1989) as alternatives standardized assessments. Further research using more contextually relevant measures to determine academic achievement is

needed to further assess the impacts of SAM, or other school reform models, on academic achievement.

Summary

The purpose of this study was to understand the effect of three years of SAM implementation on academic achievement of students in DCPS. Results were largely inconclusive due to issues related to fidelity of reform implementation, transitions in DCPS, and the sole use of standardized state assessment data to measure of student achievement. Broader implications of study results on policy, research, and practice provide guidance for future educational reform. Future research ideas presented set the stage for needed follow-up studies to add to understandings of school reform implementation and impact.

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